STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION

DIVISION 3

CONTRACT PROPOSAL

WBS ELEMENTS: 33879.2.41
ROUTE: US 421 / NC 133
COUNTY: Duplin
DESCRIPTION: Furnishing and Installing Equipment and Materials for Installation for the New Weigh In Motion System Near Wilmington, NC.
BID OPENING: 2:00 PM, Tuesday, June 8, 2010

NOTICE:

ALL BIDDERS SHALL COMPLY WITH ALL APPLICABLE LAWS REGULATING THE PRACTICE OF GENERAL CONTRACTING AS CONTAINED IN CHAPTER 87 OF THE GENERAL STATUTES OF NORTH CAROLINA WHICH REQUIRES THE BIDDER TO BE LICENSED BY THE N.C. LICENSING BOARD FOR CONTRACTORS WHEN BIDDING ON ANY NON-FEDERAL AID PROJECT WHERE THE BID IS $30,000 OR MORE, EXCEPT FOR CERTAIN SPECIALTY WORK AS DETERMINED BY THE LICENSING BOARD OR SBE PROJECT. BIDDERS SHALL ALSO COMPLY WITH ALL OTHER APPLICABLE LAWS REGULATING THE PRACTICES OF ELECTRICAL, PLUMBING, HEATING AND AIR CONDITIONING AND REFRIGERATION CONTRACTING AS CONTAINED IN CHAPTER 87 OF THE GENERAL STATUTES OF NORTH CAROLINA WITHIN 60 CALENDAR DAYS OF BID OPENING, REGARDLESS OF FUNDING SOURCES.

_____

NAME OF BIDDER **N.C. CONTRACTOR'S LICENSE NUMBER**

_____

ADDRESS OF BIDDER

RETURN BIDS TO: **North Carolina Department of Transportation**
Attn: Lloyd G. Royall, Jr. P.L.S.
124 Division Drive
Wilmington, NC 28401

INSTRUCTIONS TO BIDDERS

PLEASE READ ALL INSTRUCTIONS CAREFULLY BEFORE PREPARING AND SUBMITTING YOUR BID.

All bids shall be prepared and submitted in accordance with the following requirements. Failure to comply with any requirement shall cause the bid to be considered irregular and shall be grounds for rejection of the bid.

1. The bid sheet furnished by NCDOT with the proposal shall be used and shall not be altered in any manner. **DO NOT SEPARATE THE BID SHEET FROM THE PROPOSAL!**
2. All entries on the bid sheet, including signatures, shall be written in ink.
3. The Bidder shall submit a unit price for every item on the bid form. The unit prices for the various contract items shall be written in figures.
4. An amount bid shall be entered on the bid sheet for every item. The amount bid for each item shall be determined by multiplying each unit bid by the quantity for that item, and shall be written in figures in the "Amount Bid" column of the sheet.
5. The total amount bid shall be written in figures in the proper place on the bid sheet. The total amount shall be determined by adding the amounts bid for each item.
6. Changes in any entry shall be made by marking through the entry in ink and making the correct entry adjacent thereto in ink. A representative of the Bidder shall initial the change in ink.
7. The bid shall be properly executed. All bids shall show the following information:
   a. Name of individual, firm, corporation, partnership, or joint venture submitting bid.
   b. Name and signature of individual or representative submitting bid and position or title.
   c. Name, signature, and position or title of witness.
   d. Federal Identification Number (or Social Security Number of Individual)
   e. Contractor's License Number (if Applicable)
8. Bids submitted by corporations shall bear the seal of the corporation.
9. The bid shall not contain any unauthorized additions, deletions, or conditional bids.
10. The bidder shall not add any provision reserving the right to accept or reject an award, or to enter into a contract pursuant to an award.
11. **THE PROPOSAL WITH THE BID SHEET STILL ATTACHED SHALL BE PLACED IN A SEALED ENVELOPE AND SHALL HAVE BEEN DELIVERED TO AND RECEIVED IN THE DIVISION 3 ENGINEER'S OFFICE AT 124 DIVISION DRIVE, WILMINGTON NORTH CAROLINA 28401 BY 2:00 PM ON TUESDAY, JUNE 8, 2010.**
12. The sealed bid must display the following statement on the front of the sealed envelope:

QUOTATION FOR WBS ELEMENT # 33879.2.41: FURNISHING AND INSTALLING EQUIPMENT AND MATERIALS FOR INSTALLATION FOR THE NEW WEIGH IN MOTION SYSTEM NEAR WILMINGTON, NC. TO BE OPENED AT 2:00 PM ON TUESDAY, JUNE 8, 2010.

13. If delivered by mail, the sealed envelope shall be placed in another sealed envelope and the outer envelope shall be addressed as follows:

North Carolina Department of Transportation
Attn: Lloyd G. Royall, Jr., PLS
124 Division Drive
Wilmington, North Carolina 28401

AWARD OF CONTRACT

The award of the contract, if it be awarded, will be made to the lowest responsible Bidder in accordance with Section 102 (excluding 102-2 and 102-11) of the Standard Specifications for Roads and Structures 2006. The lowest responsible will be notified that his bid has been accepted and that he has been awarded the contract. NCDOT reserves the right to reject all bids.

CONTENTS

STANDARD PROVISIONS
GENERAL

This contract is for Furnishing and Installing Equipment and Materials for Installation for the New Weigh In Motion System Near Wilmington, NC. All work and materials shall be in accordance with the provisions of the General Guidelines of this contract, the Project Special Provisions, the North Carolina Department of Transportation Standard Specifications for Roads and Structures 2006, the North Carolina Department of Transportation Roadway Standards Drawings, the North Carolina Department of Transportation 2010 Superpave Manual and the current edition of the Manual of Uniform Traffic Control Devices (MUTCD).

The Contractor shall keep himself fully informed of all Federal, State and local laws, ordinances, and regulations, and shall comply with the provisions of Section 107 of the Standard Specifications.

CONTRACT TIME AND LIQUIDATED DAMAGES

The date of availability for this project is July 6, 2010. The Contractor may begin work prior to this date upon approval of the Engineer or his duly authorized representative. If such approval is given, and the Contractor begins work prior to the date of availability, the Department of Transportation will assume no responsibility for any delays caused prior to the date of availability by any reason whatsoever, and such delays, if any, will not constitute a valid reason for extending the completion date.

No work will be permitted and no purchase order will be issued until all required bonds and prerequisite conditions and certifications have been satisfied.

The completion date for this project is March 31, 2011. No extensions will be authorized except as authorized by Article 108-10 of the Standard Specifications .

The observation period for the thermoplastic pavement markings is not a part of the work to be completed by the completion date for this contract as stated above. The observation period shall be warranted by the payment and performance bond.

Liquidated damages for this contract are Three Hundred and Fifty Dollars ($350.00) per calendar day.

INTERMEDIATE CONTRACT TIME AND LIQUIDATED DAMAGES

(2-20-07) RG 14 B

The Contractor shall not close or narrow a lane of traffic on **ALL MAPS**, detain and/or alter the traffic flow on or during holidays, holiday weekends, special events, or any other time when traffic is unusually heavy, including the following schedules:

ALL MAPS
7:00 am through 7:00 pm
Monday through Sunday
(Night Work Only)

HOLIDAY AND HOLIDAY WEEKEND LANE CLOSURE RESTRICTIONS
ALL MAPS:

1. For **unexpected occurrence** that creates unusually high traffic volumes, as directed by the Engineer.

2. For **New Year's Day**, between the hours of 6:00 a.m. December 31st and 6:00 a.m. January 2nd. If New Year's Day is on a Friday, Saturday, Sunday or Monday, then until 6:00 a.m. the following Tuesday.

3. For **Easter**, between the hours of 6:00 a.m. Friday and 6:00 a.m. Monday.

4. For **Memorial Day**, between the hours of 6:00 a.m. Friday and 6:00 a.m. Tuesday.

5. For **Independence Day**, between the hours of 6:00 a.m. the day before Independence Day and 6:00 a.m. the day after Independence Day.

   If **Independence Day** is on a Friday, Saturday, Sunday or Monday, then between the hours of 6:00 a.m. the Thursday before Independence Day and 6:00 a.m. the Tuesday after Independence Day.

6. For **Labor Day**, between the hours of 6:00 a.m. Friday and 6:00 a.m. Tuesday.

7. For **Thanksgiving Day**, between the hours of 6:00 a.m. Tuesday and 6:00 a.m. Monday.

8. For **Christmas**, between the hours of 6:00 a.m. the Tuesday before Christmas Day and 6:00 a.m. the following Monday after Christmas Day.

Holidays and holiday weekends shall include New Year's, Easter, Memorial Day, Independence Day, Labor Day, Thanksgiving, and Christmas. The Contractor shall schedule his work so that lane closures will not be required during these periods, unless otherwise directed by the Engineer.

The time of availability for this intermediate contract work shall be the time the Contractor begins to install all traffic control devices for lane closures according to the time restrictions listed herein.

The completion time for this intermediate contract work shall be the time the Contractor is required to complete the removal of all traffic control devices for lane closures according to the time restrictions stated above and place traffic in the existing traffic pattern.

Liquidated damages are One Thousand Dollars ($1000.00) per hour.

AUTHORITY OF THE ENGINEER

The Engineer for this project shall be the Division Engineer, Division 3, Division of Highways, North Carolina Department of Transportation, acting directly or through his duly authorized representatives.

The Engineer will decide all questions which may arise as to the quality and acceptability of work performed and as to the rate of progress of the work; all questions which may arise as to the interpretation of the contract; and all questions as to the acceptable fulfillment of the contract on the part of the Contractor. His decision shall be final and he shall have executive authority to enforce and make effective such decisions and orders as the Contractor fails to carry out promptly.

AVAILABILITY OF FUNDS - CONTRACT TERMINATION

Payments on this contract are subject to availability of funds as allocated by the General Assembly. If the General Assembly fails to allocate adequate funds, the Department reserves the right to terminate this contract.

In the event of termination, the Contractor shall be given a written notice of termination at least 60 days before completion of scheduled work for which funds are available. In the event of termination, the Contractor shall be paid for the work already performed in accordance with the contract specifications.

BANKRUPTCY

The Department of Transportation, at its option, may terminate the contract upon filing by the Contractor of any petition for protection under the provisions of the Federal Bankruptcy Act.

BIDS

In accordance with GS 136-28.1(b), if the total bid amount of the contract exceeds $1,200,000, the bid will not be considered for award.

CLAIMS FOR ADDITIONAL COMPENSATION OR EXTENSION OF TIME

Any claims for additional compensation and/or extensions of the completion date shall be submitted to the Division Engineer with detailed justification within thirty (30) days after receipt of the final invoice payment. The failure of the Contractor to submit the claim(s) within thirty days shall be a bar to recovery.

CONTRACTOR CLAIM SUBMITTAL FORM:

(9-16-08) SP1G140

If the Contractor elects to file a written claim or requests an extension of contract time, it shall be submitted on the *Contractor Claim Submittal Form (CCSF)* available through the Construction Unit or http://ncdot.org/doh/operations/dp_chief_eng/constructionunit/formsmanuals/.

CONTRACT PAYMENT AND PERFORMANCE BOND

A performance bond in the amount of one hundred percent (100%) of the contract amount, conditioned upon the faithful performance of the contract in accordance with specifications and conditions of the contract is required for Construction contracts of $300,000 or more. Such bond shall be solely for the protection of the North Carolina Department of Transportation and the State of North Carolina.

A payment bond in the amount of one hundred percent (100%) of the contract amount, conditioned upon the prompt payment for all labor or materials for which the Contractor, or his subcontractors, are liable is required for Construction contracts greater than $300,000. The payment bond shall be solely for the protection of persons or firms furnishing materials or performing labor for this contract for which the Contractor is liable.

The successful bidder, within fourteen (14) days after notice of award, shall provide the Department with a contract payment bond and a contract performance bond each in an amount equal to 100 percent of the amount of the contract.

DEFAULT OF CONTRACT

The Department of Transportation shall have the right to declare a default of contract for breach by the Contractor of any material term or condition of the contract. Default of contract shall be in accordance with the terms, conditions, and procedures of Article 108-9 of the Standard Specifications.

ENGINEERING CONTROL

Engineering control and inspection will be by the North Carolina Department of Transportation. The Contractor will cut test samples as directed by the Engineer. The North Carolina Department of Transportation will set all necessary grades for pipe, ditches, or masonry drainage structures. All other field engineering will be the responsibility of the Contractor and considered as incidental to the project bid.

EROSION, SILTATION, AND POLLUTION CONTROL

The Contractor shall exercise every reasonable precaution and take all necessary measures throughout the life of the project to prevent erosion, siltation, and pollution in accordance with Section 107-13 of the Standard Specifications. Silt fence and erosion control measures shall be

installed in accordance with the plans for this project, Section 1605 of the Standard Specifications, and in locations directed by the Engineer or his representative.

EXTENSION OF CONTRACT TIME

Failure on the part of the Contractor to furnish bonds or certifications, or to satisfy preliminary requirements necessary to issue the purchase order will not constitute grounds for extension of the contract time. If the Contractor has fulfilled all preliminary requirements for the issuance of a purchase order, and the purchase order authorization is not available by the date of availability, the Contractor shall be granted an extension equal to the number of calendar days the purchase order authorization is delayed after the date of availability.

GIFTS FROM VENDORS AND CONTRACTORS:

(12-15-09) SP1 G152

By Executive Order 24, issued by Governor Perdue, and *N.C. G.S.§ 133-32,* it is unlawful for any vendor or contractor (i.e. architect, bidder, contractor, construction manager, design professional, engineer, landlord, offeror, seller, subcontractor, supplier, or vendor), to make gifts or to give favors to any State employee of the Governor's Cabinet Agencies (i.e. Administration, Commerce, Correction, Crime Control and Public Safety, Cultural Resources, Environment and Natural Resources, Health and Human Services, Juvenile Justice and Delinquency Prevention, Revenue, Transportation, and the Office of the Governor). This prohibition covers those vendors and contractors who:

(1) have a contract with a governmental agency; or
(2) have performed under such a contract within the past year; or
(3) anticipate bidding on such a contract in the future.

For additional information regarding the specific requirements and exemptions, vendors and contractors are encouraged to review Executive Order 24 and *G.S. § 133-32*.

Executive Order 24 also encouraged and invited other State Agencies to implement the requirements and prohibitions of the Executive Order to their agencies. Vendors and contractors should contact other State Agencies to determine if those agencies have adopted Executive Order 24.

INSPECTION

All work shall be subject to inspection by the Engineer at any time. Routinely, the Engineer will make periodic inspections of the completed work. It will be the responsibility of the Contractor to keep the Engineer informed of his proposed work plan and to submit written reports of work accomplished on a frequency to be determined by the Engineer.

LEGAL RELATIONS AND RESPONSIBILITY TO PUBLIC

(12-19-06)(Rev 3-16-10) SP1 G151

Revise the *2006 Standard Specifications* as follows:

Page 1-60, 107-2 Assignment of Claims Void, replace the reference from *G.S. 143-3.3* to ***G.S. 143B-426.40A***.

Page 1-69, 107-18 Contractor's Responsibility for Work, in the first paragraph, last sentence, replace the word *legally* with the word ***contractually***.

LIABILITY INSURANCE:

(11-18-08) SP1 G80

Page 1-68, Article 107-16 is amended to include the following as the first, second, third and fourth paragraphs:

The Contractor shall be liable for any losses resulting from a breach of the terms of this contract. The Contractor shall be liable for any losses due to the negligence or willful misconduct of its agents, assigns and employees including any sub-contractors which causes damage to others for which the Department is found liable under the Torts Claims Act, or in the General Courts of Justice, provided the Department provides prompt notice to the Contractor and that the Contractor has an opportunity to defend against such claims. The Contractor shall not be responsible for punitive damages.

The Contractor shall at its sole cost and expense obtain and furnish to the Department an original standard ACORD form certificate of insurance evidencing commercial general liability with a limit for bodily injury and property damage in the amount of $5,000,000.00 per occurrence and general aggregate, covering the Contractor from claims or damages for bodily injury, personal injury, or for property damages which may arise from operating under the contract by the employees and agents of the Contractor. The required limit of insurance may be obtained by a single general liability policy or the combination of a general liability and excess liability or umbrella policy. The State of North Carolina shall be named as an additional insured on this commercial general liability policy. The policy may contain the following language as relates to the State as an additional insured: "This insurance with respect to the additional insured applies only to the extent that the additional insured is held liable for your or your agent's acts or omissions arising out of and in the course of operations performed for the additional insured."

The Contractor shall maintain all legally required insurance coverage, including without limitation, worker's compensation and vehicle liability, in the amounts required by law. Providing and maintaining adequate insurance coverage is a material obligation of the contractor and is of the essence of this contract. All such insurance shall meet all laws of the State of North Carolina. Such insurance coverage shall be obtained from companies that are authorized to provide such coverage and that are authorized by the Commissioner of Insurance to do business in North Carolina. The Contractor shall at all times comply with the terms of such insurance policies.

Upon execution of the contract, provide evidence of the above insurance requirements to the Engineer.

The successful bidder, within fourteen (14) days after notice of award, shall provide the Department with proof of insurance.

MATERIALS AND TESTING

The Engineer reserves the right to perform all sampling and testing in accordance with Section 106 of the Standard Specifications and the Department's "Materials and Test Manual." However the Engineer may reduce the frequency of sampling and testing where he deems it appropriate for the project under construction.

The Contractor shall furnish the applicable certifications and documentation for all materials as required by the Standard Specifications. Material which is not properly certified will not be accepted.

Delivery tickets for all asphalt material shall be furnished in accordance with Section 106-7 of the Standard Specifications and shall include the following information:

1. NCDOT WBS Element
2. Date
3. Time issued
4. Type of Material
5. Gross weight
6. Tare Weight
7. Net weight of material
8. Plant Location
9. Truck Number
10. Contractor's name
11. Public weighmaster's stamp or number
12. Public weighmaster's signature or initials in ink
13. Job mix formula number

MINIMUM WAGES

(7-21-09) Z-5

FEDERAL: The Fair Labor Standards Act provides that with certain exceptions every employer shall pay wages at the rate of not less than SEVEN DOLLARS AND TWENTY FIVE CENTS ($7.25) per hour.

STATE: The North Carolina Minimum Wage Act provides that every employer shall pay to each of his employees, wages at a rate of not less than SEVEN DOLLARS AND TWENTY FIVE CENTS ($7.25) per hour.

The minimum wage paid to all skilled labor employed on this contract shall be SEVEN DOLLARS AND TWENTY FIVE CENTS ($7.25) per hour.

The minimum wage paid to all intermediate labor employed on this contract shall be SEVEN DOLLARS AND TWENTY FIVE CENTS ($7.25) per hour.

The minimum wage paid to all unskilled labor on this contract shall be SEVEN DOLLARS AND TWENTY FIVE CENTS ($7.25) per hour.

This determination of the intent of the application of this act to the contract on this project is the responsibility of the Contractor.

The Contractor shall have no claim against the Department of Transportation for any changes in the minimum wage laws, Federal or State. It is the responsibility of the Contractor to keep fully informed of all Federal and State Laws affecting his contract.

PAYMENT AND RETAINAGE

P&R_DDC
8-06-2009

The Contractor may submit a request for partial payment on a monthly basis, or other interval as approved by the Engineer. Compensation for all pay items shall be in accordance with the Standard Specifications. The amount of partial payments will be based on the work accomplished and accepted as the last day of the approved pay period.

All requests for payment shall be made on the form furnished to the Contractor by the Department of Transportation. The form shall be completely and legibly filled out with all appropriate information supplied and shall be signed by an authorized representative of the Contractor.

All invoices must be accompanied with the DBE-IS form even if no Subcontractors payments were made. Payment request shall not be processed without said form filled out and attached.

If the request for payment is made by Contractor's Invoice, the Invoice shall be submitted in triplicate to:

North Carolina Department of Transportation
Attention: Kerry Cross, P.E.
Resident Engineer
401 N. Smith Street
Burgaw, NC 28425

Minority Business (MB) and Women's Business (WB) participation shall be listed in the appropriate spaces on all requests for payment. If there is no participation the word "None" or the figure "0" shall be entered. An amount equal to five percent (5%) of the total amount due on the partial pay estimate will be deducted and retained until after the final inspection. One hundred percent (100%) payment shall be made after successful completion of the work as verified by the

final inspection.

PREQUALIFICATION TO BID ON POC'S

Beginning **July 1, 2009**, any firm that wishes to perform work on Division Purchase Order Contracts as either the prime contractor or as a subcontractor on the project must be prequalified for the type of work they wish to perform. Firms that wish to bid on these projects as the prime contractor must be prequalified prior to submitting a bid. Firms that wish to perform as a subcontractor to the prime contractor must be prequalified prior to beginning work on the project.

For the purposes of prequalification, any firm that is currently prequalified as a prime or a subcontractor on central let projects for the appropriate work codes is considered eligible to work and/or bid on Purchase Order Contracts as long as other items such as bonding and license requirements for the contract are met.

Information regarding the requirements to become prequalified as a Purchase Order Contract contractor, including the application to become prequalified if you are not already prequalified, can be found at the following website:
http://www.ncdot.org/business/howtogetstarted/

POSTED WEIGHT LIMITS

The Contractor's attention is directed to the fact that many primary and secondary roads and bridges are posted with weight limits less than the legal limit. The Contractor will not be allowed to exceed the posted weight limits in transporting materials or equipment to the project. The Contractor should make a thorough examination of all maps and haul routes on this project.

SAFETY AND ACCIDENT PROTECTION

In accordance with Article 107-22 of the Standard Specifications, the Contractor shall comply with all applicable Federal, State, and local laws, ordinances, and regulations governing safety, health, and sanitation, and shall provide all safeguards, safety devices, and protective equipment, and shall take any other needed actions, on his own responsibility that are reasonably necessary to protect the life and health of employees on the job and the safety of the public, and to protect property in connection with the performance of the work covered by the contract.

SAFETY VESTS

All Contractors' personnel, all subcontractors and their personnel, and any material suppliers and their personnel shall wear a reflective vest or outer garment conforming to the requirements of MUTCD at all times while on the project.

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SUBLETTING OF CONTRACT

The Contractor shall not sublet, sell, transfer, assign or otherwise dispose of this contract or any portion thereof; or his right, title, or interest therein; without written consent of the Engineer.

Subletting of this contract or any portion of the contract shall conform to the requirements of Article of 108-6 of the Standard Specifications.

SUPERVISION BY CONTRACTOR

At all times during the life of the project the Contractor shall provide one permanent employee who shall have the authority and capability for overall responsibility of the project and who shall be personally available at the work site within 24 hours notice. Such employee shall be fully authorized to conduct all business with the subcontractors, to negotiate and execute all supplemental agreements, and to execute the orders or directions of the Engineer.

At all times that work is actually being performed, the Contractor shall have present on the project one competent individual who is authorized to act in a supervisory capacity over all work on the project, including work subcontracted. The individual who has been so authorized shall be experienced in the type of work being performed and shall be fully capable of managing, directing, and coordinating the work; of reading and thoroughly understanding the contract; and receiving and carrying out directions from the Engineer or his authorized representatives. He shall be an employee of the Contractor unless otherwise approved by the Engineer.

The Contractor may, at his option, designate one employee to meet the requirements of both positions. However, whenever the designated employee is absent from the work site, an authorized individual qualified to act in a supervisory capacity on the project shall be present.

TEMPORARY SUSPENSION OF WORK

In accordance with Article 108-7 of the Standard Specifications, the Engineer will have the authority to suspend the work wholly or in part, any written order for such periods as he may deem necessary for any of the following reasons.

1. Conditions considered unfavorable for the suitable prosecution of the work, or

2. The Contractor's failure for correct conditions unsafe for workmen or the general public, or

3. The Contractor has not carried out orders given to him by the Engineer, or

4. The Contractor's failure to perform any provisions of the contract.

No extension of the completion date will be allowed for the above suspensions except as may be provided for in Article 108-10.

TRAFFIC CONTROL AND WORK ZONE SAFETY

The Contractor shall maintain traffic during construction and provide, install, and maintain all traffic control devices in accordance with these project guidelines, the Project Special Provisions,

North Carolina Department of Transportation Standard Specifications for Roads and Structures, and the current edition of the Manual of Uniform Traffic Control Devices (MUTCD).

The Contractor shall utilize complete and proper traffic controls and traffic control devices during all operations. All traffic control and traffic control devices required for any operation shall be functional and in place prior to the commencement of that operation. Signs for temporary operations shall be removed during periods of inactivity. The Contractor is required to leave the project in a manner that will be safe to the traveling public and which will not impede motorists.

Traffic movements through lane closures on roads with two way traffic shall be controlled by flaggers stationed at each end of the work zone. In situations where sight distance is limited, the Contractor shall provide additional means of controlling traffic, including, but not limited to, two-way radios, pilot vehicles, or additional flaggers. Flaggers shall be competent personnel, adequately trained in flagging procedures, and furnished with proper safety devices and equipment, including, but not limited to, safety vests and stop/slow paddles.

All personnel when working in traffic areas or areas in close proximity to traffic shall wear an approved safety vest, or shirt or jacket which meets the color requirements of the Manual of Uniform Traffic Control Devices (MUTCD).

The Contractor shall comply with all applicable Federal, State, and local laws, ordinances, and regulations governing safety, health, and sanitation, and shall provide all safeguards, safety devices, and protective equipment, and shall take any other needed actions, on his own responsibility that are reasonably necessary to protect the life and health of employees on the job and the safety of the public, and to protect property in connection with the performance of the work covered by the contract.

Failure to comply with any of the requirements for safety and traffic control of this contract shall result in suspension of work as provided in subarticle 108-7(B) of the Standard Specifications.

No direct payment shall be made for Traffic Control and Work Zone Safety Items, as they shall be considered incidental to other contract items.

UTILITY CONFLICTS

It shall be the responsibility of the Contractor to contact all affected utility owners and determine the precise locations of all utilities prior to beginning construction. Utility owners shall be contacted a minimum of 48 hours prior to the commencement of operations. Special care shall be used in working around or near existing utilities, protecting them when necessary to provide uninterrupted service. In the event that any utility service is interrupted, the Contractor shall notify the utility owner immediately and shall cooperate with the owner, or his representative, in the restoration of service in the shortest time possible. Existing fire hydrants shall be kept accessible to fire departments at all times.

The Contractor shall adhere to all applicable regulations and follow accepted safety procedures when working in the vicinity of utilities in order to insure the safety of construction personnel and the public.

WORKERS' COMPENSATION INSURANCE

Pursuant to N.C.G.S. § 97-19, all contractors of the Department of Transportation are, prior to beginning services, required to show proof of coverage issued by a workers' compensation insurance carrier, or a certificate of compliance issued by the Department of Insurance for self-insured subcontractors stating that it has complied with N.C.G.S. § 97-93 irrespective of whether subcontractors have regularly in service fewer than three employees in the same business within the State of North Carolina, and subcontractors shall be hereinafter liable under the Workers' Compensation Act for payment of compensation and other benefits to its employees for any injury or death due to an accident arising out of and in the course of performance of the work insured by the subcontractor.

ERRATA

(7-21-09) Z-4

Revise the *Standard Specifications for Roads and Structures July 2006* on all projects as follows:

Division 1

Page 1-1, replace AREA - American Railway Engineering Association with ***American Railway Engineering and Maintenance of Way Association*.**

Page 1-7, remove **–L-** in middle of page after INVITATION TO BID and before LABORATORY.

Page 1-25, 102-16(R), move 2nd paragraph to left margin. It is not a part of this subarticle, but part of the entire article.

Division 2

Page 2-9, Subarticle 225-1(C), 1st paragraph, 2nd line, last word, add a "d" to make the word grade become ***graded***.
Page 2-15, Subarticle 226-3, 5th paragraph, first line, replace the word *in* with the word ***is***.
Page 2-23, Subarticle 235-4(B)(9), at the end of the sentence, replace finished greater with finished ***grade***.
Page 2-28, Article 260-3, First paragraph, second line, remove the word *foot*.

Division 3

Page 3-13, Article 340-4, Second paragraph, change Flowable Backfill to Flowable ***Fill***

Division 4

Page 4-29, Article 420-13(A) Description, change reference from Section 1082 to ***Article 1081-6***.

Page 4-40 Subarticle 420-17(F) first line, change Subarticle 420-17(B) to ***(B) herein***.

Page 4-70, Article 442-13(B) Second sentence, change SSPC Guide 6I to SSPC Guide ***6.***

Pages 4-72, 4-74, 4-76, at the top of the page, substitute the heading Section 452 with Section ***450*.**

Page 4-79, at the top of the page, substitute the heading Section 450 with Section ***452***

Page 4-80, change 452-7 to 452-***6*** at the top of the page.

Page 4-80, change Pay Item ___Steel Pile Retaining Walls, to ***Sheet*** Pile Retaining Walls.

Page 4-88, 462-4, Title, Replace last word Measurement with the word ***PAYMENT***

Division 5

Page 5-8, Article 501-15 Measurement and Payment, delete the 4th paragraph that begins The quantity of lime, measured as provided …

Page 5-14, Article 520-11 Measurement and Payment, first paragraph, second line, delete *will be.*

Division 6

Page 6-3, Article 600-9, 2nd Paragraph on this page, replace 818-5 with 818-***4***.

Pages 6-30 and 31, Subarticle 610-3(A)(13) Move 2 paragraphs from the margin to the right under the number (13).

Page 6-43, Article 610-8, 4th paragraph, remove the first ***the***

Page 6-44, 2nd full paragraph, 1st sentence, delete the first ***and*** and add ***transverse*** just before cross-slope control.

Page 6-51, at the top of the page, add ***610-14*** on the same line, and just before the heading MAINTENANCE.

Page 6-53, Article 620-4 sixth paragraph, second line; the word that should be ***which***.

Page 6-66, title, Replace EXISTNG with **EXISTING**

Page 6-66, Article 657-1, Description, first sentence, replace PS/AR (hot-poured rubber asphalt with ***hot applied joint sealer***.

Page 6-66, Article 657-2, replace PS/AR (Hot-Poured Rubber Asphalt with the following:

Item	Section
Hot Applied Joint Sealer	***1028-2***

Page 6-67, at the top of the page, substitute the heading Section 654 with Section ***657.***

Page 6-67, Article 657-3 Construction Methods, 2nd paragraph, replace PS/AR sealant with ***hot applied joint sealer***.

Page 6-71, 660-9(B)(1), Replace the first sentence of the first paragraph with the following:

Using the quantities shown in *Table 660-1,* apply asphalt material to the existing surface followed by an application of No. 78 M or lightweight aggregate.

Page 6-89; Add a period at the end of the last sentence at the bottom of the page.

Page 6-90, Article 663-5, first paragraph, first sentence, change 50oF to ***$50^{o}F$;*** third paragraph, fourth sentence change 325oF to ***$325^{o}F$.***

Division 7

Page 7-12, at the top of the page, substitute the heading Section 710 with Section ***700***.

Page 7-15, Article 710-9, 4th paragraph, last line, change 710-11(B) to 710-1***0***(B).

Division 8

Page 8-13, Article 808-3, 4th Paragraph, third line, replace Eexcavation with ***Excavation***

Page 8-35, Article 848-2, Item: Replace Cncrete with ***Concrete***

Division 9

Page 9-2, add ***901-3*** just before CONSTRUCTION METHODS

Division 10

Page 10-12, near bottom of page add ***(C)*** before Proportioning and Mixing of Modified Compositions, which should be bold type.

Page 10-28, at the top of the page, substitute Section 100***6*** for 1005.

Page 10-54, Subarticle 1018-2A), First line, substitute ***(B)*** for II, third line, substitute ***(B)(2)*** for II-b.

Pages 10-56, 10-58, 10-60 at the top of the page, substitute Section 1018 with Section ***1020.***

Page 10-84, Table 1042-1, Class 2, Maximum, change from 23r to ***23***.

Page 10-84, Article 1042-2 Testing, last sentence, replace the word alterations with the word ***cycles***.

Page 10-100, Table 1056-1, replace on the line for Trapezoidal Tear Strength:

Type 1	Type 2	Type 3		Type 4
		Class A	Class B	Soil Stabilization
45 lb	***75*** lb	--	--	***75*** lb

Page 10-116, Subarticle 1070-10, first paragraph, second sentence, add ***or*** just before cold-forged sleeve.

Pages 10-136 through 10-147, at the top of the page, substitute Section 1074 with Section ***1072***.

Page 10-157, Article 1077-11, first paragraph, change the reference from Subarticle 420-18(B) to Subarticle 420-***17***(B).

Page 10-200, Subarticle 1080-14(B), change reference to ASTM D335***9***

Page 10-211, at the top of the page, substitute Section 1081 with Section ***1082.***

Page 10-229, add ***1088-6 BLANK*** on the line above 1088-7 TUBULAR MARKERS.

Page 10-244, add **1089-10** ***BLANK*** and **1089-11** ***BLANK*** on the lines just above 1089-12 FLAGGER.

Page 10-272, delete Article 1098-6 in its entirety. Renumber Articles 1098-7 through 1098-17 as Articles 1098-6 through 1098-16 consecutively.

Division 12

Page 12-21 Add ***1266-2*** just before the heading MATERIALS.

Division 14

Page 14-33, Article 1413-6, first paragraph, first sentence, first line, replace made with ***paid for.***

Division 15

- Page 15-2 add ***1500-4*** just before the heading WEEKEND, NIGHT AND HOLIDAY WORK.
- Page 15-4, Subarticle 1505-3(A)(2), replace the 2nd line with the following: ***Provide shielding or shoring as required under Section 150 or as required elsewhere in the contract.***
- Page 15-5, add ***1505-6*** on the same line and just before the heading MEASUREMENT AND PAYMENT. (Remove the period after PAYMENT.)
- Page 15-6, Article 1505-6(3), delete *in Section 1175* and replace it with *elsewhere in the contract*.
- Page 15-8, add **1510-4** on the same line and just before the heading MEASUREMENT AND PAYMENT.
- Page 15-10, substitute **BLANK** for CONSTRUCTION REQUIREMENTS on the same line and just before 1515-4.
- Page 15-10, substitute **CONSTRUCTION REQUIREMENTS** for General Requirements
- Page 15-10, Article 1515-4, add ***(D)*** just before the bolded Fire Hydrants.
- Page 15-13, Article 1520-3, 8th paragraph, add ***pipe*** after diameter.
- Page 15-22, add ***1540-3*** on the same line and just before the heading CONSTRUCTION REQUIREMENTS.
- Page 15-28, Replace 1550-6 METHOD OF MEASUREMENT with ***MEASUREMENT AND PAYMENT.***

Division 16

- Page 16-12, Subarticle 1632-1(C) ¼ Inch hardware cloth, change the minimum width from 24 inches to 48 inches.

END

SPECIAL PROVISIONS

NOTES TO CONTRACTOR

The Contractor's attention is directed to the following:

The Contractor shall not close more than one lane of traffic without prior approval of the Engineer.

Portable "Road Construction Ahead" signs may be used in lieu of post mounted signs, as directed by the Engineer.

Any clearing necessary for the satisfactory completion of the project will be the Contractor's responsibility and will be incidental to the various items in the Contract.

DISADVANTAGED BUSINESS ENTERPRISE (POC AND MUNICIPALITIES)

(10-16-07)(Rev 10-20-09) SP1G62

Policy

It is the policy of the North Carolina Department of Transportation that Disadvantaged Business Enterprises (DBEs) as defined in *49 CFR Part 26* shall have the equal opportunity to compete fairly for and to participate in the performance of contracts financed in whole or in part by Federal Funds.

Obligation

The Contractor, subcontractor, and sub-recipient shall not discriminate on the basis of race, religion, color, national origin, age, disability or sex in the performance of this contract. The Contractor shall comply with applicable requirements of *49 CFR Part 26* in the award and administration of federally assisted contracts. Failure by the Contractor to comply with these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy, as the Department deems necessary.

Definitions

Commitment - The approved DBE participation submitted by the prime contractor during the bidding process.

Committed DBE - Any DBE listed on the DBE commitment list approved by the Department at the time of bid submission or any DBE utilized as a replacement for a DBE firm listed on the commitment list.

Department - North Carolina Department of Transportation

Municipality - The entity letting the contract, when this provision refers to the Department or DOT, it shall mean municipality, if applicable.

Disadvantaged Business Enterprise (DBE) – A firm certified as a Disadvantage Business Enterprise through the North Carolina Unified Certification Program.

Goal - The DBE participation specified herein

Letter of Intent – Written documentation of the bidder/offeror's commitment to use a DBE subcontractor and confirmation from the DBE that it is participating in the contract.

Manufacturer - A firm that operates or maintains a factory or establishment that produces on the premises the materials or supplies obtained by the Contractor.

Regular Dealer - A firm that owns, operates, or maintains a store, warehouse, or other establishment in which the materials or supplies required for the performance of the contract are bought, kept in stock, and regularly sold to the public in the usual course of business. A regular dealer engages in, as its principal business and in its own name, the purchase and sale or lease of the products in question. A regular dealer in such bulk items as steel, cement, gravel, stone, and petroleum products need not keep such products in stock, if it owns or operates distribution equipment. Brokers and packagers are not regarded as manufacturers or regular dealers within the meaning of this section.

Form RS-1-D - Form for subcontracts involving DBE subcontractors attesting to the agreed upon unit prices and extensions for the affected contract items.

North Carolina Unified Certification Program - A program that provides comprehensive information to applicants for certification, such that an applicant is required to apply only once for a DBE certification that will be honored by all recipients of USDOT funds in the state and not limited to the Department of Transportation only. The Certification Program is in accordance with *49 CFR Part 26*.

Standard Specifications – The general term comprising all directions, provisions, and requirements contained or referred to in the *North Carolina Department of Transportation Standard Specifications for Roads and Structures* and any subsequent revisions or additions to such book that are issued under the title *Supplemental Specifications*.

USDOT - United States Department of Transportation, including the Office of the Secretary, the Federal Highway Administration (FHWA), the Federal Transit Administration (FTA), and the Federal Aviation Administration (FAA).

Contract Goal

The following goal for participation by Disadvantaged Business Enterprises is established for this contract:

Disadvantaged Business Enterprises **0** %

(A) *If the goal is more than zero*, the Contractor shall exercise all necessary and reasonable steps to ensure that Disadvantaged Business Enterprises participate in at least the percent of the contract as set forth above as the goal.

(B) *If the goal is zero*, the Contractor shall continue to recruit the DBEs and report the use of DBEs during the construction of the project. A good faith effort will not be required with a zero goal.

Contract Requirement

The approved DBE participation submitted by the Contractor shall be the **Contract Requirement**.

Certified Transportation Firms Directory

Real-time information about firms doing business with the Department and firms that are certified through North Carolina's Unified Certification Program is available in the Directory of Transportation Firms. The Directory can be accessed by the link on the Department's homepage or by entering https://apps.dot.state.nc.us/vendor/directory in the address bar of your web browser. Only firms identified as DBE certified in the Directory can be utilized to meet the contract goals.

The listing of an individual firm in the Department's directory shall not be construed as an endorsement of the firm's capability to perform certain work.

Listing of DBE Subcontractors in Contract

Only those DBE firms with current certification are acceptable for listing in the bidder's submittal of DBE participation. The Contractor shall indicate the following required information:

(A) *If the goal is more than zero* bidders, at the time the bid proposal is submitted, shall submit a listing of DBE participation on the appropriate form (or facsimile thereof) contained elsewhere in the contract documents in order for the bid to be considered responsive. Bidders shall indicate the total dollar value of the DBE participation for the contract. If the bidder has no DBE participation, they shall indicate this on the form "Listing of DBE Subcontractors" by entering the word or number zero. This form shall be completed in its entirety. **Blank forms will not be deemed to represent zero participation**. Bids submitted that do not have DBE participation indicated on the appropriate form will not be read publicly during the opening of bids. The Department will not consider these bids for award and the proposal will be returned to the bidder.

(B) *If the goal is zero,* bidders at the time the bid proposal is submitted, shall enter the word "zero" or number "0" or if there is participation, add the value on the "Listing of DBE Subcontractors" (or facsimile thereof) contained elsewhere in the contract documents.

Written Documentation – Letter of Intent

The bidder shall submit written documentation of the bidder/offeror's commitment to use a DBE subcontractor whose participation it submits to meet a contract goal and written confirmation from each DBE, listed in the proposal, indicating their participation in the contract. This documentation shall be submitted on the Department's form titled "Letter of Intent to Perform as a Subcontractor". This letter of intent form is available at: http://www.ncdot.org/doh/preconstruct/ps/contracts/letterofintent.pdf. It shall be received in the office of the Scott E. Cooke, P.E. no later than 12:00 noon of the sixth calendar day following opening of bids.

If the bidder fails to submit the letter of intent from each committed DBE listed in the proposal indicating their participation in the contract, the DBE participation will not count toward meeting the goal.

Counting DBE Participation Toward Meeting DBE Goal of Zero or More

(A) If a firm is determined to be an eligible DBE firm, the total dollar value of the participation by the DBE will be counted toward the contract requirement. The total dollar value of participation by a certified DBE will be based upon the value of work actually performed by the DBE and the actual payments to DBE firms by the Contractor.

(B) When a DBE performs as a participant in a joint venture, the Contractor may count toward its DBE goal a portion of the total value of participation with the DBE in the joint venture, that portion of the total dollar value being a distinct clearly defined portion of work that the DBE performs with its forces.

(C) (1) The Contractor may count toward its DBE requirement only expenditures to DBEs that perform a commercially useful function in the work of a contract. A DBE performs a commercially useful function when it is responsible for execution of the work of the contract and is carrying out its responsibilities by actually performing, managing, and supervising the work involved. To perform a commercially useful function, the DBE shall also be responsible with respect to materials and supplies used on the contract, for negotiating price, determining quality and quantity, ordering the material and installing (where applicable) and paying for the material itself. To determine whether a DBE is performing a commercially useful function, the Department will evaluate the amount of work subcontracted, industry practices, whether the amount the firm is to be paid under the contract is commensurate with the work it is actually performing and the DBE credit claimed for its performance of the work, and other relevant factors.

(2) A DBE may enter into subcontracts. Work that a DBE subcontracts to another DBE firm may be counted toward the contract requirement. Work that a DBE subcontracts to a non-DBE firm does not count toward the contract requirement. If a DBE contractor or subcontractor subcontracts a significantly greater portion of the work of the contract than would be expected on the basis of standard industry practices, the DBE shall be presumed not to be performing a commercially useful function. The DBE may present evidence to rebut this presumption to the Department for commercially useful functions. The Department's decision on the rebuttal of this presumption is subject to review by the Federal Highway Administration but is not administratively appealable to USDOT.

(3) The following factors will be used to determine if a DBE trucking firm is performing a commercially useful function.

(a) The DBE shall be responsible for the management and supervision of the entire trucking operation for which it is responsible on a particular contract, and there shall not be a contrived arrangement for the purpose of meeting DBE goals.

(b) The DBE shall itself own and operate at least one fully licensed, insured, and operational truck used on the contract.

(c) The DBE receives credit for the total value of the transportation services it provides on the contract using trucks it owns, insures, and operates using drivers it employs.

(d) The DBE may lease trucks from another DBE firm, including an owner-operator who is certified as a DBE. The DBE who leases trucks from another DBE receives credit for the total value of the transportation services the lessee DBE provides on the contract.

(e) The DBE may also lease trucks from a non-DBE firm, including from an owner-operator. The DBE who leases trucks from a non-DBE is entitled to credit for the total value of transportation services provided by non-DBE lessees not to exceed the value of transportation services provided by DBE-owned trucks on the contract. Additional participation by non-DBE lessees receives credit only for the fee or commission it receives as a result of the lease arrangement. The value of services performed under lease agreements between the DBE and Contractor will not count towards the contract requirement.

(f) For purposes of this paragraph, a lease shall indicate that the DBE has exclusive use of and control over the truck. This does not preclude the leased truck from working for others during the term of the lease with the consent of the DBE, so long as the lease gives the DBE absolute priority

for use of the leased truck. Leased trucks shall display the name and identification number of the DBE.

(D) A contractor may count toward its DBE requirement 60 percent of its expenditures for materials and supplies required to complete the contract and obtained from DBE regular dealer and 100 percent of such expenditures to a DBE manufacturer.

(E) A contractor may count toward its DBE requirement the following expenditures to DBE firms that are not manufacturers or regular dealers:

(1) The fees or commissions charged by a DBE firm for providing a bona fide service, such as professional, technical, consultant, or managerial services, or for providing bonds or insurance specifically required for the performance of a DOT-assisted contract, provided the fees or commissions are determined to be reasonable and not excessive as compared with fees and commissions customarily allowed for similar services.

(2) The fees or commissions charged for assistance in the procurement of the materials and supplies, or for transportation charges for the delivery of materials or supplies required on a job site (but not the cost of the materials and supplies themselves), provided the fees are not from a manufacturer or regular dealer and provided the fees are determined to be reasonable and not excessive as compared with fees customarily allowed for similar services.

Good Faith Effort for Projects with Goals More Than Zero

If the DBE participation submitted in the bid by the apparent lowest responsive bidder does not meet or exceed the DBE contract goal, the apparent lowest responsive bidder shall submit to the Department documentation of its good faith efforts made to reach the contract goal. One complete set and 5 copies of this information shall be received in the office of the Divison Project Manager no later than 12:00 noon of the sixth calendar day following opening of bids. Where the information submitted includes repetitious solicitation letters it will be acceptable to submit a representative letter along with a distribution list of the firms that were solicited. Documentation of DBE quotations shall be a part of the good faith effort submittal as necessary to demonstrate compliance with the factors listed below which the Department considers in judging good faith efforts. This documentation may include written subcontractor quotations, telephone log notations of verbal quotations, or other types of quotation documentation.

The following factors will be used to determine if the bidder has made adequate good faith effort:

(A) Whether the bidder attended any pre-bid meetings that were scheduled by the Department to inform DBEs of subcontracting opportunities.

(B) Whether the bidder provided solicitations through all reasonable and available means (e.g. advertising in newspapers owned and targeted to the Disadvantaged) at least 10 calendar days prior to bid opening. Whether the bidder provided written notice to all DBEs listed

in the NCDOT Directory of Transportation Firms, within the Divisions and surrounding Divisions where the project is located, that specialize in the areas of work (as noted in the DBE Directory) that the bidder will be subletting.

(C) Whether the bidder followed up initial solicitations of interests by contacting DBEs to determine with certainty whether they were interested. If a reasonable amount of DBEs within the targeted Divisions do not provide an intent to quote or no DBEs specialize in the subcontracted areas, the bidder shall notify DBEs outside of the targeted Divisions that specialize in the subcontracted areas, and contact the Director of Business and Opportunity Workforce Development to give notification of the bidder's inability to get DBE quotes.

(D) Whether the bidder selected portions of the work to be performed by DBEs in order to increase the likelihood of meeting the contract goals. This includes, where appropriate, breaking out contract work items into economically feasible units to facilitate DBE participation, even when the bidder might otherwise perform these work items with its own forces.

(E) Whether the bidder provided interested DBEs with adequate and timely information about the plans, specifications and requirements of the contract.

(F) Whether the bidder negotiated in good faith with interested DBEs without rejecting them as unqualified without sound reasons based on a thorough investigation of their capabilities. Any rejection should be noted in writing with a description as to why an agreement could not be reached.

(G) Whether quotations were received from interested DBE firms but rejected as unacceptable without sound reasons why the quotations were considered unacceptable. The fact that the DBE firms quotation for the work is not the lowest quotation received will not in itself be considered as a sound reason for rejecting the quotation as unacceptable. The fact that the bidder has the ability and/or desire to perform the contract work with its own forces will not be considered as sound reason for rejecting a DBE quote. Nothing in this provision shall be construed to require the bidder to accept unreasonable quotes in order to satisfy contract goals.

(H) Whether the bidder specifically negotiated with subcontractors to assume part of the responsibility to meet the contract DBE goal when the work to be sublet includes potential for DBE participation.

(I) Whether the bidder made any efforts and/or offered assistance to interested DBEs in obtaining the necessary equipment, supplies, materials, insurance, and/or bonding to satisfy the work requirements in the bid proposal.

(J) Any other evidence that the bidder submits which show that the bidder has made reasonable good faith efforts to meet the contract goal.

If a bidder is the apparent lowest responsive bidder on more than one project within the same letting located in the same geographic area of the state, as a part of the good faith effort the Department will consider allowing the bidder to combine the DBE participation as long as the DBE overall goal value of the combined projects is achieved.

If the Department does not award the contract to the apparent lowest responsive bidder, the Department reserves the right to award the contract to the next lowest responsive bidder that can satisfy the Department that the contract goal can be met or that adequate good faith efforts have been made to meet the goal.

DBE Replacement

The Contractor shall not terminate a committed DBE subcontractor for convenience or perform the work with its own forces or those of an affiliate. If the Contractor fails to demonstrate reasonable efforts to replace a committed DBE firm that does not perform as intended with another committed DBE firm or completes the work with its own forces without the Engineer's approval, the Contractor may be disqualified from further bidding for a period of up to 6 months.

The Contractor shall comply with the following for replacement of committed DBE.

(A) Performance Related Replacement

When a DBE is terminated or fails to complete its work on the contract for any reason, the Contractor shall take all necessary, reasonable steps to replace the DBE subcontractor with another DBE subcontractor to perform at least the same amount of work as the DBE that was terminated. The Contractor is encouraged to first attempt to find another DBE firm to do the same work as the DBE that was being terminated.

To demonstrate necessary, reasonable good faith efforts, the Contractor shall document the steps they have taken to replace any DBE subcontractor who is unable to perform successfully with another DBE subcontractor. Such documentation shall include but not be limited to the following:

(1) Copies of written notification to DBEs that their interest is solicited in subcontracting the work defaulted by the previous DBE subcontractor or in subcontracting other items of work in the contract.

(2) Efforts to negotiate with DBEs for specific subbids including, at a minimum:

(a) The names, addresses, and telephone numbers of DBEs who were contacted.

(b) A description of the information provided to DBEs regarding the plans and specifications for portions of the work to be performed.

(3) For each DBE contacted but rejected as unqualified, the reasons for the Contractor's conclusion.

(4) Efforts made to assist the DBEs contacted, if needed, in obtaining bonding or insurance required by the Contractor.

(B) Decertification Replacement

(1) When a committed DBE is decertified by the Department after a Request for Subcontract has been received by the Department, the Department will not require the Prime Contractor to solicit replacement DBE participation equal to the remaining work to be performed by the decertified firm. The participation equal to the remaining work performed by the decertified firm will count toward the contract requirement.

(2) When a committed DBE is decertified prior to the Department receiving a Request for Subcontract for the named DBE firm, the Prime Contractor shall take all necessary and reasonable steps to replace the DBE subcontractor with another DBE subcontractor to perform at least the same amount of work to meet the contract goal or demonstrate that it has made a good faith effort to do so.

Changes in the Work

When the Engineer makes changes that result in the reduction or elimination of work to be performed by a committed DBE, the Contractor will not be required to seek additional participation. When the Engineer makes changes that result in additional work to be performed by a DBE based upon the Contractor's commitment, the DBE shall participate in additional work to the same extent as the DBE participated in the original contract work.

When the Engineer makes changes that result in extra work, which has more than a minimal impact on the contract amount, the Contractor shall seek additional participation by DBEs unless otherwise approved by the Engineer.

When the Engineer makes changes that result in an alteration of plans or details of construction and a portion or all of work had been expected to be performed by a committed DBE, the Contractor shall seek participation by DBEs unless otherwise approved by the Engineer.

When the Contractor requests changes in the work that result in the reduction or elimination of work that the Contractor committed to be performed by a DBE, the Contractor shall seek additional participation by DBEs equal to the reduced DBE participation caused by the changes.

Reports

All requests for subcontracts involving DBE subcontractors shall be accompanied by a certification executed by both the Prime Contractor and the DBE subcontractor attesting to the

agreed upon unit prices and extensions for the affected contract items. This information shall be submitted on the Department Form RS-1-D, located at: http://www.ncdot.org/doh/forms/files/FORMRS-1-D.doc unless otherwise approved by the Engineer. The Department reserves the right to require copies of actual subcontract agreements involving DBE subcontractors.

Within 30 calendar days of entering into an agreement with a DBE for materials, supplies or services, not otherwise documented by a Request for Subcontract as specified above, the Contractor shall furnish the Engineer a copy of the agreement. The documentation should also indicate the percentage (60% or 100%) of expenditures claimed for DBE credit.

All certifications will be considered a part of the project records, and consequently will be subject to penalties under Federal Law associated with falsifications of records related to projects.

Reporting Disadvantaged Business Enterprise Participation

(A) The Contractor shall provide the Engineer with an accounting of payments made to Disadvantaged Business Enterprise firms, including material suppliers, contractors at all levels (prime, subcontractor, or second tier subcontractor). This accounting shall be furnished to the Engineer for any given month by the end of the following month. Failure to submit this information accordingly may result in the following action:

(1) Withholding of money due in the next partial pay estimate; or

(2) Removal of an approved contractor from the prequalified bidders' list or the removal of other entities from the approved subcontractors list. (Municipality may add to, change or delete this section.)

(B) The Contractor shall report the accounting of payments on the Department's DBE Subcontractor Payment Information Form DBE-IS, which is available at: http://www.ncdot.org/doh/forms/files/DBE-IS.xls. This shall be reported to the State Contractor Utilization Engineer.

(C) Contractors reporting transportation services provided by non-DBE lessees shall evaluate the value of services provided during the month of the reporting period only.

Prior to payment of the final estimate, the Contractor shall furnish an accounting of total payment to each DBE. A responsible fiscal officer of the payee contractor, subcontractor, or second tier subcontractor who can attest to the date and amounts of the payments shall certify that the accounting is correct.

While each contractor (prime, subcontractor, 2nd tier subcontractor) is responsible for accurate accounting of payments to DBEs, it shall be the prime contractor's responsibility to report all monthly and final payment information in the correct reporting manner.

Because Federal Funding is being used to fund this project, failure on the part of the Contractor to submit the required information in the time frame specified may result in the disqualification of that contractor and any affiliate companies from further bidding until the required information is submitted.

Because Federal Funding is being used to fund this project, failure on the part of any subcontractor to submit the required information in the time frame specified may result in the disqualification of that contractor and any affiliate companies from working on any Federal or State project until the required information is submitted.

Failure to Meet Contract Requirements

Failure to meet contract requirements in accordance with Article 102-16(J) of the *Standard Specifications* may be cause to disqualify the Contractor.

COOPERATION WITH STATE FORCES AND OTHER CONTRACTORS

The Contractor must cooperate with State forces and other contractors working within the limits of this project as directed by the Engineer.

DAMAGE TO EXISTING PAVEMENT, BASE, SUBGRADE, AND PROPOSED PAVEMENT

In addition to the requirements of the Standard Specifications concerning this subject, the Contractor is cautioned that he will be held responsible for all damages to the pavement, base, and subgrade caused by his operations, including but not limited to, rutting and shoving of the existing or proposed pavement and yielding or rutting of the existing base and subgrade.

The Contractor is cautioned to limit the weight of his equipment and the frequency of hauls so as to not damage the existing pavement, base, subgrade and the proposed pavement.

Any subgrade or base failures which the Contractor finds prior to the beginning of his operations or during the conditioning of the existing base are to be brought to the attention of the Engineer in writing. Repairs to those areas will be made by DOT forces. Once these deficient areas have been repaired, the requirements of this Special Provision will fully apply.

DRIVEWAYS AND PRIVATE PROPERTY

The Contractor shall maintain access to driveways for all residents and property owners throughout the life of the project.

The Contractor shall not perform work for private citizens or agencies in conjunction with this project or within the project limits of this contract. Any driveway paved by a Contractor which ties into a NCDOT system road being paved by the Contractor must be paved either prior to the road paving project or after its completion.

MAINTENANCE OF PROJECT

The Contractor shall be responsible for maintaining the project as directed by Section 104-10 in the Standard Specifications.

NOTIFICATION OF OPERATIONS

The Contractor shall notify the Engineer one week in advance of beginning work on this project. The Contractor shall give the Engineer sufficient notice of all operations for any sampling, inspection or acceptance testing required. It should be noted that grading, draining, and stabilizing operations on the subject routes will be performed by Departmental Forces. All routes may not be available by the above listed date.

ON-THE-JOB TRAINING

(10-16-07) (Rev 7-21-09) Z-10

Description

The North Carolina Department of Transportation will administer a custom version of the Federal On-the-Job Training (OJT) Program, commonly referred to as the Alternate OJT Program. All contractors (existing and newcomers) will be automatically placed in the Alternate Program. Standard OJT requirements typically associated with individual projects will no longer be applied at the project level. Instead, these requirements will be applicable on an annual basis for each contractor administered by the OJT Program Manager.

On the Job Training shall meet the requirements of 23 CFR 230.107 (b), 23 USC – Section 140, this provision and the On-the-Job Training Program Manual.

The Alternate OJT Program will allow a contractor to train employees on Federal, State and privately funded projects located in North Carolina. However, priority shall be given to training employees on NCDOT Federal-Aid funded projects.

Minorities and Women

Developing, training and upgrading of minorities and women toward journeyman level status is a primary objective of this special training provision. Accordingly, the Contractor shall make every effort to enroll minority and women as trainees to the extent that such persons are available within

a reasonable area of recruitment. This training commitment is not intended, and shall not be used, to discriminate against any applicant for training, whether a member of a minority group or not.

Assigning Training Goals

The Department, through the OJT Program Manager, will assign training goals for a calendar year based on the contractors' past three years' activity and the contractors' anticipated upcoming year's activity with the Department. At the beginning of each year, all contractors eligible will be contacted by the Department to determine the number of trainees that will be assigned for the upcoming calendar year. At that time the Contractor shall enter into an agreement with the Department to provide a self-imposed on-the-job training program for the calendar year. This agreement will include a specific number of annual training goals agreed to by both parties. The number of training assignments may range from 1 to 15 per contractor per calendar year. The Contractor shall sign an agreement to fulfill their annual goal for the year. A sample agreement is available at www.ncdot.org/business/ocs/ojt/.

Training Classifications

The Contractor shall provide on-the-job training aimed at developing full journeyman level workers in the construction craft/operator positions. Preference shall be given to providing training in the following skilled work classifications:

Equipment Operators	Office Engineers
Truck Drivers	Estimators
Carpenters	Iron / Reinforcing Steel Workers
Concrete Finishers	Mechanics
Pipe Layers	Welders

The Department has established common training classifications and their respective training requirements that may be used by the contractors. However, the classifications established are not all-inclusive. Where the training is oriented toward construction applications, training will be allowed in lower-level management positions such as office engineers and estimators. Contractors shall submit new classifications for specific job functions that their employees are performing. The Department will review and recommend for acceptance to FHWA the new classifications proposed by contractors, if applicable. New classifications shall meet the following requirements:

Proposed training classifications are reasonable and realistic based on the job skill classification needs, and

The number of training hours specified in the training classification is consistent with common practices and provides enough time for the trainee to obtain journeyman level status.

The Contractor may allow trainees to be trained by a subcontractor provided that the Contractor retains primary responsibility for meeting the training and this provision is made applicable to the subcontract. However, only the Contractor will receive credit towards the annual goal for the trainee.

Where feasible, 25 percent of apprentices or trainees in each occupation shall be in their first year of apprenticeship or training. The number of trainees shall be distributed among the work classifications on the basis of the contractor's needs and the availability of journeymen in the various classifications within a reasonable area of recruitment.

No employee shall be employed as a trainee in any classification in which they have successfully completed a training course leading to journeyman level status or in which they have been employed as a journeyman.

Records and Reports

The Contractor shall maintain enrollment, monthly and completion reports documenting company compliance under these contract documents. These documents and any other information as requested shall be submitted to the OJT Program Manager.

Upon completion and graduation of the program, the Contractor shall provide each trainee with a certification Certificate showing the type and length of training satisfactorily completed.

Trainee Interviews

All trainees enrolled in the program will receive an initial and Trainee/Post graduate interview conducted by the OJT program staff.

Trainee Wages

Contractors shall compensate trainees on a graduating pay scale based upon a percentage of the prevailing minimum journeyman wages (Davis-Bacon Act). Minimum pay shall be as follows:

60 percent	of the journeyman wage for the first half of the training period
75 percent	of the journeyman wage for the third quarter of the training period
90 percent	of the journeyman wage for the last quarter of the training period

In no instance shall a trainee be paid less than the local minimum wage. The Contractor shall adhere to the minimum hourly wage rate that will satisfy both the NC Department of Labor (NCDOL) and the Department.

Achieving or Failing to Meet Training Goals

The Contractor will be credited for each trainee employed by him on the contract work who is currently enrolled or becomes enrolled in an approved program and who receives training for at

least 50 percent of the specific program requirement. Trainees will be allowed to be transferred between projects if required by the Contractor's scheduled workload to meet training goals.

If a contractor fails to attain their training assignments for the calendar year, they may be taken off the NCDOT's Bidders List.

Measurement and Payment

No compensation will be made for providing required training in accordance with these contract documents.

PLAN, DETAIL AND QUANTITY ADJUSTMENTS

The Department reserves the right to make, at any time during the progress of the work, such alterations in plans or the details of construction as may be found necessary or desirable by the Engineer to complete the project.

PRECONSTRUCTION CONFERENCE

In accordance with Section 108-3 of the Standard Specifications, a preconstruction conference will be required prior to beginning work.

PROSECUTION AND PROGRESS

The Contractor shall pursue the work diligently with workmen in sufficient numbers, abilities, and supervision, and with equipment, materials, and methods of construction as may be required to complete the work described in the contract by the completion date and in accordance with Section 108 of the Standard Specifications.

Work shall only be performed when weather and visibility conditions allow safe operations.

The Contractor shall temporarily remove his equipment from the travelway for emergency vehicles and school buses as directed by the Engineer.

SUBSURFACE INFORMATION

(7-1-95) SP1 G112

There is **no** subsurface information available on this project. The Contractor shall make his own investigation of subsurface conditions.

TRAFFIC CONTROL

(10-21-08) RWZ-1

Maintain traffic in accordance with Divisions 10, 11 and 12 of the *Standard Specifications* and the following provisions:

Use a lane closure (refer to the *Roadway Standard Drawings* Nos. 1101.02, 1101.11, 1110.02, 1130.01 and details for the Advance Work Zone signing in contract) or a slow-moving operation as shown in details of this contract. Use a moving operation only if the minimum speed maintained at all times is 3 mph with no stops that narrow or close a lane of travel. If the moving operation is progressing slower than 3 mph at any time, install a lane closure. Maintain the existing traffic pattern at all times, except in the immediate work zone where lane closures are allowed as determined by the Engineer.

Refer to Attached Details and the *Roadway Standard Drawings* Nos. 1101.02, 1101.03, 1101.04, 1101.05, 1101.11, 1110.01, 1110.02, 1115.01, 1130.01, 1135.01, 1145.01, 1150.01, 1165.01, 1170.01 and 1180.01 when closing a lane of travel in a stationary work zone such as pavement patching resurfacing, or pavement marking removal. Properly ballasted cones may be used instead of drums for lane closures during daylight hours. However, drums are required for the upstream taper portion of lane closures in all applications. The stationary work zone shall be a maximum of 3 miles in length at any given time unless otherwise directed by the Engineer. A pilot vehicle operation may be used in conjunction with flaggers and the appropriate pilot vehicle warning signing as directed by the Engineer. During periods of construction inactivity, return the traffic pattern to the existing alignment and remove or cover any work zone signs. When covering work zone signs, use an opaque material that prevents reading of the sign at night by a driver using high beam headlights. Use material, which does not damage the sign sheeting. Replace any obliterated markings as required by other sections of the *Standard Specifications* and the Engineer.

When personnel and equipment are working on the shoulder adjacent to an undivided facility and within 5 feet of an open travel lane, close the nearest open travel lane using the *Roadway Standard Drawings* No. 1101.02 unless the work area is protected by barrier or guardrail. When personnel and equipment are working on the shoulder, adjacent to a divided facility and within 10 feet of an open travel lane, close the nearest open travel lane using the *Roadway Standard Drawings* No. 1101.02 unless the work area is protected by barrier or guardrail. When personnel and equipment are working within a lane of travel of an undivided or divided facility, close the lane according to the traffic control plans, *Roadway Standard Drawings* or as directed by the Engineer. Conduct the work so that all personnel and equipment remain within the closed travel lane. Do not work simultaneously, on both sides of an open travel way, within the same location, on a two-lane, two-way road. Do not perform work involving heavy equipment within 15 feet of the edge of travel way when work is being performed behind a lane closure on the opposite side of the travel way. Perform work only when weather and visibility conditions allow safe operations as directed by the Engineer.

Do not exceed a difference of 2 inches in elevation between open lanes of traffic for nominal lifts of 1.5 inches. Install advance warning UNEVEN LANES signs (W8-11 at 48" X 48") 500 feet in advance and a minimum of once every half mile throughout the uneven area.

Backfill at a 6:1 slope up to the edge and elevation of existing pavement in areas adjacent to an open travel lane that has an edge of pavement drop-off as follows:

(A) Drop-off that exceeds 2 inches on roadways with posted speed limits of 45 mph or greater

(B) Drop-off that exceeds 3 inches on roadways with posted speed limit less than 45 mph.

Backfill the unacceptable drop-off with suitable compacted material, as approved by the Engineer, at no expense to the Department. This work is not considered part of shoulder reconstruction.

When utilizing a slow-moving operation for such items as pavement marking placement, pavement marker installation and pesticide spraying, the slow moving operation caravan shall consist, as a minimum, of the vehicles and devices shown on the Moving Operation Caravan Detail(s) herein. Traffic cones may be used when necessary to provide additional protection of wet pavement markings. Ballast all traffic cones so they will not be blown over by traffic.

Submit a written sequence of operation for all maps to the Engineer at the first pre-construction meeting for approval by the Engineer. Approved sequence can not be altered without written permission of the Engineer.

Notify the Engineer 48 hours before milling or resurfacing will interfere with the existing Signal Loops. Loops may need to be placed in milled surface before resurfacing occurs. Coordinate all signal loop operations with the Engineer.

Notify the Engineer 15 consecutive calendar days before resurfacing a bridge or its approaches. Patch and make repairs to bridge surface and its approaches before resurfacing occurs. Coordinate all operations on the bridge and its approaches with the Engineer.

Notify the Engineer 48 hours before resurfacing the areas of existing pavement that require patching. Patch these areas before resurfacing occurs. Allow full depth asphalt patching to cool to the point of supporting traffic without displacement or rutting before reopening closed lane. Coordinate the resurfacing operations of the patched areas with the Engineer.

During a resurfacing only operation, bring all newly resurfaced lanes to the same elevation within 72 hours.

For partial or wheel track milling operations on two-way, two-lane facilities, mill and pave back by the end of each work day. For partial or wheel track milling operations on multi-lane facilities, the lane being milled may be left closed and paved back within 72 hours.

The following options are acceptable during Resurfacing and milling operations on two-way, two-lane facilities when the entire roadway or entire lane is to be milled:

(A) Mill a single lane and pave back by the end of each work day.
(B) Mill the entire width of roadway and pave back within 72 hours.

The following options are available during Resurfacing and milling operations on multi-lane facilities when all lanes or a single lane in one direction are to be milled:

(A) Mill the entire width of pavement for all lanes to be milled in any direction daily and pave back within 72 hours.
(B) Mill a single lane and pave back by the end of each work day.
(C) Mill a single lane, leave a lane closure in and pave back within 72 hours.

When resurfacing facilities with ramps, resurface the ramp and gore area of the ramp as directed by the Engineer. A transverse joint shall be placed on the ramp at the terminal point of the gore. Newly resurfaced lanes on the main roadway and the ramp shall be at the same elevation where traffic merges.

Slope the pavement at the beginning and ending of the daily milling operation as directed by the Engineer. Sweep and remove all milled material from the roadway as soon as the daily milling operation is completed. Continue milling operations until the particular section of roadway being milled is complete. Remove any existing pavement adjacent to the milled area that has been damaged, and replace with patch material as directed by the Engineer.

Maintain vehicular access in accordance with Section 1101-13 of the *Standard Specifications* using suitable backfill material approved by the Engineer.

Operate equipment and conduct operations in the same direction as the flow of traffic. Do not cross medians with equipment, except at properly designated interchanges.

Review and record the existing pavement markings and markers prior to resurfacing. Use the record of existing pavement markings and markers in conjunction with the *Roadway Standard Drawings* to re-establish the proposed pavement markings and markers unless otherwise directed by the Engineer.

Provide appropriate lighting in accordance with Section 1413 of the *Standard Specifications*.

Remove existing pavement markers in preparation for paving. Repair any pavement damage due to existing pavement marker removal prior to the end of the work day. Dispose of existing pavement markers as directed by the Engineer. No direct payment will be made for this work, as it will be incidental to the paving operation.

Measurement and Payment

Traffic Control will be paid for as contract lump sum price.

Pay Item	Pay Unit
Generic Traffic Control Item-Traffic Control Lump Sum	Lump Sum

Payment will be made for the traffic control items that have been included in the contract. No direct payment will be made for providing other traffic control as required herein, as the cost of same will be considered incidental to the work being paid for under those various traffic control items that have been included. Where the Contractor maintains traffic as required herein but no specific pay items have been included in the contract, all associated costs will be considered incidental to the work being paid for under the various items in the contract.

WORK ZONE SIGNING

(10-21-08) RWZ-3Revised

Description

Install and maintain signing in accordance with Divisions 11 and 12 of the *Standard Specifications*, the *Roadway Standard Drawings* and the latest revisions thereto, and the following provisions:

Furnish, install, maintain, and remove advance warning work zone signs and any required lane closure signing.

Furnish, install, and maintain general work zone warning signs for resurfacing and/or milling such as ROUGH ROAD (W8-8 at 48" X 48") (for milling only), UNEVEN LANES (W8-11 at 48" X 48"), UNMARKED PAVEMENT AHEAD (DOT No. 116087130 at 48" X 48") and DO NOT PASS (R4-1 at 24" X 30"). **Install and maintain general work zone warning signs for resurfacing and/or milling such as "Low Shoulder" (W8-9 at 48" X 48") and "Low / Soft Shoulder" (DOT No. 16-79860 at 48" X 48"). State Forces will furnish and remove the signs, posts, and hardware for "Low Shoulder" (W8-9 at 48" x 48") and "Low / Soft Shoulder" (DOT No. 16-79860 at 48" X 48").** When construction is completed in any given area of the project, relocate signs to the next work site, as directed by the Engineer. Remove all signs **except "Low Shoulder and Low/Soft Shoulder"** at the completion of the project, unless otherwise directed by the Engineer.

All work zone signs may be portable.

Construction Methods

(A) General

Install all warning work zone signs before beginning work on a particular map. If signs are installed three days prior to the beginning of work on a particular map, cover the signs until the work begins. Install each work zone warning sign separately and not on the same post(s) / stand(s) with any other sign except where an advisory speed plate or directional arrow is used.

(B) Advance Warning Work Zone Signs

Install advance warning work zone signs (see attached Details and the *Roadway Standard Drawings* Nos. 1101.02 and 1110.01 and advance signing details) prior to beginning of work and remove upon final completion of the project. If there is a period of construction inactivity longer than two weeks, remove or cover advance warning work zone signs. Uncover advance warning work zone signs no more than 3 days before work resumes. All other operations could be suspended upon failure to comply with the above requirements. Such suspended operations would not be resumed until the above requirements are fulfilled.

(C) Lane Closure Work Zone Signs

Install any required lane closure signing needed during the life of the project in accordance with the *Roadway Standard Drawings* Nos. 1101.02, 1101.11 and 1110.02.

(D) General Work Zone Warning Signs

Install general work zone warning signs for resurfacing and/or milling such as ROUGH ROAD (W8-8 at 48" X 48") (for milling only), UNEVEN LANES (W8-11 at 48" X 48"), LOW SHOULDER (W8-9 at 48" X 48") and LOW / SOFT SHOULDER (W8-9B at 48” X 48”) at 1 mile intervals starting at a minimum of 500 feet in advance of the condition for both directions of travel (undivided roadways only) and at any other points determined by the Engineer.

Install the LOW SHOULDER (W8-9 at 48" X 48") or LOW / SOFT SHOULDER (DOT No. 16-79860 at 48” X 48”) signs prior to any resurfacing in an area where shoulder construction will be performed.

Install general work zone warning signs such as UNMARKED PAVEMENT AHEAD (DOT No. 116087130 at 48" X 48") and DO NOT PASS (R4-1 at 24" X 30") alternately at 1/2 mile intervals starting at a minimum of 500 feet in advance of the condition for both directions of travel (undivided roadways only) and at any other points determined by the Engineer. Install signs prior to the obliteration of any pavement markings.

Measurement and Payment

Payment will be made for the work zone signing items that have been included in the contract. No direct payment will be made for providing other work zone signing as required herein, as the cost of same will be considered incidental to the work being paid for under those various work zone signing items that have been included. Where the Contractor provides work zone signing as required herein but no specific pay items have been included in the contract, all associated costs will be considered incidental to the work being paid for under the various items in the contract.

TIME LIMITATION FOR PAVEMENT MARKINGS AND MARKERS ON NEWLY RESURFACED AREAS

(12-18-07) RWZ-4

Markings: Two-Lane, Two-Way Facilities

For all two-lane, two-way facilities, place all edge lines and other symbols within 30 calendar days after they have been obliterated by the resurfacing operation.

Markings: All Facilities

The pavement markings on a specific map are subject to a 180-day observation period that begins with the satisfactory completion of all pavement markings required on a specific map and shall meet all requirements as specified in Subarticle 1205-3(H) Observation Period of the *Standard Specifications*.

Any portion of stop bars that are obliterated at intersections of a multilane roadway and all its approaches shall be replaced by the end of each work day prior to opening the lane to traffic. Any portion of stop bars that are obliterated at 2-lane 2-way roadway intersections shall be replaced by the end of 5th calendar day.

Prior to opening the lane(s) to traffic, all pavement markings that are obliterated by milling should be replaced as specified in Subarticle 1205-3(D) Time Limitations for Replacement of the *Standard Specifications* or as stated herein.

Final pavement marking applications of paint shall be placed in 2 applications of 15 mils wet each. Each application of paint pavement marking lines will be measured and paid for as the actual number of linear feet of pavement marking lines that have been satisfactorily placed and accepted by the Engineer.

Markers: All Facilities

Install permanent pavement markers within 60 calendar days after completing the resurfacing on each map.

ROADWAY STANDARD DRAWINGS FOR PAVEMENT MARKINGS AND MARKERS

(7-18-06) RWZ-5

Use the following in conjunction with the *Standard Specifications:*

Standard Pavement Markings	*Roadway Standard Drawings*: 1205.01, 1205.02, 1205.03, 1205.04, 1205.05, 1205.06,

1205.07, 1205.08, 1205.09, 1205.10, 1205.11, 1205.12

Raised Pavement Markers *Roadway Standard Drawings*: 1205.12, 1250.01, 1251.01

Snowplowable Pavement Markers *Roadway Standard Drawings*: 1250.01, 1253.01

FEDERAL AID PROJECT PROVISIONS

AWARD OF CONTRACT

(6-28-77) Z-6

"The North Carolina Department of Transportation, in accordance with the provisions of *Title VI of the Civil Rights Act of 1964* (78 Stat. 252) and the Regulations of the Department of Transportation (*49 C.F.R., Part 21*), issued pursuant to such act, hereby notifies all bidders that it will affirmatively insure that the contract entered into pursuant to this advertisement will be awarded to the lowest responsible bidder without discrimination on the ground of race, color, or national origin".

MINORITY AND FEMALE EMPLOYMENT REQUIREMENTS

Z-7

NOTICE OF REQUIREMENTS FOR AFFIRMATIVE ACTION TO ENSURE EQUAL EMPLOYMENT OPPORTUNITY (*EXECUTIVE NUMBER 11246*)

1. The goals and timetables for minority and female participation, expressed in percentage terms for the Contractor's aggregate workforce in each trade on all construction work in the covered area, see as shown on the attached sheet entitled "Employment Goals for Minority and Female participation".

These goals are applicable to all the Contractor's construction work (whether or not it is Federal or federally assisted) performed in the covered area. If the Contractor performs construction work in a geographical area located outside of the covered area, it shall apply the goals established for such geographical area where the work is actually performed. With regard to this second area, the Contractor also is subject to the goals for both its federally involved and nonfederally involved construction.

The Contractor's compliance with the Executive Order and the regulations in *41 CFR Part 60-4* shall be based on its implementation of the Equal Opportunity Clause, specific affirmative action obligations required by the specifications set forth in *41 CFR 60-4.3(a)*, and its effort to meet the goals. The hours of minority and female employment and training must be substantially uniform throughout the length of the contract, and in each trade and the Contractor shall make a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority or female employees or trainees from Contractor to Contractor or from

project to project or the sole purpose of meeting the Contractor's goals shall be a violation of the contract, the executive Order and the regulations *in 41 CFR Part 60-4*. Compliance with the goals will be measured against the total work hours performed.

2. As used in this Notice and in the contract resulting from this solicitation, the "covered area" is the county or counties shown on the cover sheet of the proposal form and contract.

EMPLOYMENT GOALS FOR MINORITY AND FEMALE PARTICIPATION

Economic Areas

Area 023 29.7%

Bertie County
Camden County
Chowan County
Gates County
Hertford County
Pasquotank County
Perquimans County

Area 024 31.7%

Beaufort County
Carteret County
Craven County
Dare County
Edgecombe County
Green County
Halifax County
Hyde County
Jones County
Lenoir County
Martin County
Nash County
Northampton County
Pamlico County
Pitt County
Tyrrell County
Washington County
Wayne County
Wilson County

Area 025 23.5%

Columbus County
Duplin County
Onslow County
Pender County

Area 026 33.5%

Bladen County
Hoke County
Richmond County
Robeson County
Sampson County
Scotland County

Area 027 24.7%

Chatham County
Franklin County
Granville County
Harnett County
Johnston County
Lee County
Person County
Vance County
Warren County

Area 028 15.5%

Alleghany County
Ashe County
Caswell County
Davie County
Montgomery County
Moore County
Rockingham County
Surry County
Watauga County
Wilkes County

Area 029 15.7%

Alexander County
Anson County
Burke County
Cabarrus County
Caldwell County
Catawba County
Cleveland County
Iredell County
Lincoln County
Polk County
Rowan County
Rutherford County
Stanly County

Area 0480 8.5%

Buncombe County
Madison County

Area 030 6.3%

Avery County
Cherokee County
Clay County
Graham County
Haywood County
Henderson County
Jackson County
McDowell County
Macon County
Mitchell County
Swain County
Transylvania County
Yancey County

SMSA Areas

Area 5720 26.6%
Currituck County

Area 9200 20.7%
Brunswick County
New Hanover County

Area 2560 24.2%
Cumberland County

Area 6640 22.8%
Durham County
Orange County
Wake County

Area 1300 16.2%
Alamance County

Area 3120 16.4%
Davidson County
Forsyth County
Guilford County
Randolph County
Stokes County
Yadkin County

Area 1520 18.3%
Gaston County
Mecklenburg County
Union County

Goals for Female

Participation in Each Trade

(Statewide) 6.9%

REQUIRED CONTRACT PROVISIONS FEDERAL - AID CONSTRUCTION CONTRACTS

FHWA - 1273 Electronic Version - March 10, 1994 Z-8

I. General
II. Nondiscrimination
III. Nonsegregated Facilities
IV. Payment of Predetermined Minimum Wage
V. Statements and Payrolls
VI. Record of Materials, Supplies, and Labor
VII. Subletting or Assigning the Contract
VIII. Safety: Accident Prevention
IX. False Statements Concerning Highway Project
X. Implementation of Clean Air Act and Federal Water Pollution Control Act
XI. Certification Regarding Debarment, Suspension, Ineligibility, and Voluntary Exclusion
XII. Certification Regarding Use of Contract Funds for lobbying

ATTACHMENTS

A. Employment Preference for Appalachian Contracts (included in Appalachian contracts only)

I. GENERAL

1. These contract provisions shall apply to all work performed on the contract by the contractor's own organization and with the assistance of workers under the contractor's immediate superintendent and to all work performed on the contract by piecework, station work, or by subcontract.
2. Except as otherwise provided for in each section, the contractor shall insert in each subcontract all of the stipulations contained in these Required Contract Provisions, and further require their inclusion in any lower tier subcontract or purchase order that may in turn be

made. The Required Contract Provisions shall not be incorporated by reference in any case. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with these Required Contract Provisions.

3. A breach of any of the stipulations contained in these Required Contract Provisions shall be sufficient grounds for termination of the contract.
4. A breach of the following clauses of the Required Contract Provisions may also be grounds for debarment as provided in 29 CFR 5.12:
   Section I, paragraph 2;
   Section IV, paragraphs 1, 2, 3, 4, and 7;
   Section V, paragraphs 1 and 2a through 2g.
5. Disputes arising out of the labor standards provisions of Section IV (except paragraph 5) and Section V of these Required Contract Provisions shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the U.S. Department of Labor (DOL) as set forth in 29 CFR 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and the contracting agency, the DOL, or the contractor's employees or their representatives.
6. **Selection of Labor:** During the performance of this contract, the contractor shall not:
   a. discriminate against labor from any other State, possession, or territory of the United States (except for employment preference for Appalachian contracts, when applicable, as specified in Attachment A), or
   b. employ convict labor for any purpose within the limits of the project unless it is labor performed by convicts who are on parole, supervised release, or probation.

II. NONDISCRIMINATION

(Applicable to all Federal-aid construction contracts and to all related subcontracts of $10,000 or more.)

1. **Equal Employment Opportunity:** Equal employment opportunity (EEO) requirements not to discriminate and to take affirmative action to assure equal opportunity as set forth under laws, executive orders, rules, regulations (28 CFR 35, 29 CFR 1630 and 41 CFR 60) and orders of the Secretary of Labor as modified by the provisions prescribed herein, and imposed pursuant to 23 U.S.C. 140 shall constitute the EEO and specific affirmative action standards for the contractor's project activities under this contract. The Equal Opportunity Construction Contract Specifications set forth under 41 CFR 60-4.3 and the provisions of the American Disabilities Act of 1990 (42 U.S.C. 12101 et seq.) set forth under 28 CFR 35 and 29 CFR 1630 are incorporated by reference in this contract. In the execution of this contract, the contractor agrees to comply with the following minimum specific requirement activities of EEO:
   a. The contractor will work with the State highway agency (SHA) and the Federal Government in carrying out EEO obligations and in their review of his/her activities under the contract.
   b. The contractor will accept as his operating policy the following statement:
      "It is the policy of this Company to assure that applicants are employed, and that employees are treated during employment, without regard to their race, religion, sex, color, national origin, age or disability. Such action shall include: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship, preapprenticeship, and/or on-the-job training."
2. **EEO Officer:** The contractor will designate and make known to the SHA contracting officers an EEO Officer who will have the responsibility for and must be capable of effectively administering and promoting an active contractor program of EEO and who must be assigned adequate authority and responsibility to do so.
3. **Dissemination of Policy:** All members of the contractor's staff who are to hire, supervise, promote, and discharge employees, or who recommend such action, or who are substantially involved in such action, will be made fully cognizant of, and will implement, the contractor's EEO policy and contractual will be taken as a minimum:
   a. Periodic meetings of supervisory and personnel office employees will be conducted before the start of work and then not less often than once every six months, at which time the contractor's EEO policy and its implementation will be reviewed and explained. The meetings will be conducted by the EEO Officer.
   b. All new supervisory or personnel office employees will be given a thorough indoctrination by the EEO Officer, covering all major aspects of the contractor's EEO obligations within thirty days following their reporting for duty with the contractor.
   c. All personnel who are engaged in direct recruitment for the project will be instructed by the EEO Officer in the contractor's procedures for locating and hiring minority group employees.
   d. Notices and posters setting forth the contractor's EEO policy will be placed in areas readily accessible to employees, applicants for employment and potential employees.
   e. The contractor's EEO policy and the procedures to implement such policy will be brought to the attention of employees by means of meetings, employee handbooks, or other appropriate means.
4. **Recruitment:** When advertising for employees, the contractor will include in all advertisements for employees the notation: "An Equal Opportunity Employer." All such advertisements will be placed in publications having a large circulation among minority groups in the area from which the project work force would normally be derived.
   a. The contractor will, unless precluded by a valid bargaining agreement, conduct systematic and direct recruitment through public and private employee referral sources likely to yield qualified minority group applicants. To meet this requirement, the contractor will identify sources of potential minority group employees, and establish with such identified sources procedures whereby minority group applicants may be referred to the contractor for employment consideration.
   b. In the event the contractor has a valid bargaining agreement providing for exclusive hiring hall referrals, he is expected to observe the provisions of that agreement to the extent that the system permits the contractor's compliance with EEO contract provisions. (The DOL has held that where implementation of such agreements have the effect of discriminating against minorities or women, or obligates the contractor to do the same, such implementation violates Executive Order 11246, as amended.)
   c. The contractor will encourage his present employees to refer minority group applicants for employment. Information and procedures with regard to referring minority group applicants will be discussed with employees.
5. **Personnel Actions:** Wages, working conditions, and employee benefits shall be established and administered, and personnel actions of every type, including hiring, upgrading, promotion, transfer, demotion, layoff, and termination, shall be taken without regard to race, color, religion, sex, national origin, age or disability. The following procedures shall be followed:
   a. The contractor will conduct periodic inspections of project sites to insure that working conditions and employee facilities do not indicate discriminatory treatment of project site personnel.

b. The contractor will periodically evaluate the spread of wages paid within each classification to determine any evidence of discriminatory wage practices.

c. The contractor will periodically review selected personnel actions in depth to determine whether there is evidence of discrimination. Where evidence is found, the contractor will promptly take corrective action. If the review indicates that the discrimination may extend beyond the actions reviewed, such corrective action shall include all affected persons.

d. The contractor will promptly investigate all complaints of alleged discrimination made to the contractor in connection with his obligations under this contract, will attempt to resolve such complaints, and will take appropriate corrective action within a reasonable time. If the investigation indicates that the discrimination may affect persons other than the complainant, such corrective action shall include such other persons. Upon completion of each investigation, the contractor will inform every complainant of all of his avenues of appeal.

6. **Training and Promotion:**

a. The contractor will assist in locating, qualifying, and increasing the skills of minority group and women employees, and applicants for employment.

b. Consistent with the contractor's work force requirements and as permissible under Federal and State regulations, the contractor shall make full use of training programs, i.e., apprenticeship, and on-the-job training programs for the geographical area of contract performance. Where feasible, 25 percent of apprentices or trainees in each occupation shall be in their first year of apprenticeship or training. In the event a special provision for training is provided under this contract, this subparagraph will be superseded as indicated in the special provision.

c. The contractor will advise employees and applicants for employment of available training programs and entrance requirements for each.

d. The contractor will periodically review the training and promotion potential of minority group and women employees and will encourage eligible employees to apply for such training and promotion.

7. **Unions:** If the contractor relies in whole or in part upon unions as a source of employees, the contractor will use his/her best efforts to obtain the cooperation of such unions to increase opportunities for minority groups and women within the unions, and to effect referrals by such unions of minority and female employees. Actions by the contractor either directly or through a contractor's association acting as agent will include the procedures set forth below:

a. The contractor will use best efforts to develop, in cooperation with the unions, joint training programs aimed toward qualifying more minority group members and women for membership in the unions and increasing the skills of minority group employees and women so that they may qualify for higher paying employment.

b. The contractor will use best efforts to incorporate an EEO clause into each union agreement to the end that such union will be contractually bound to refer applicants without regard to their race, color, religion, sex, national origin, age or disability.

c. The contractor is to obtain information as to the referral practices and policies of the labor union except that to the extent such information is within the exclusive possession of the labor union and such labor union refuses to furnish such information to the contractor, the contractor shall so certify to the SHA and shall set forth what efforts have been made to obtain such information.

d. In the event the union is unable to provide the contractor with a reasonable flow of minority and women referrals within the time limit set forth in the collective bargaining agreement, the contractor will, through independent recruitment efforts, fill the employment vacancies without regard to race, color, religion, sex, national origin, age or disability; making full efforts to obtain qualified and/or qualifiable minority group persons and women. (The DOL has held that it shall be no excuse that the union with which the contractor has a collective bargaining agreement providing for exclusive referral failed to refer minority employees.) In the event the union referral practice prevents the contractor from meeting the obligations pursuant to Executive Order 11246, as amended, and these special provisions, such contractor shall immediately notify the SHA.

8. **Selection of Subcontractors, Procurement of Materials and Leasing of Equipment:** The contractor shall not discriminate on the grounds of race, color, religion, sex, national origin, age or disability in the selection and retention of subcontractors, including procurement of materials and leases of equipment.

a. The contractor shall notify all potential subcontractors and suppliers of his/her EEO obligations under this contract.

b. Disadvantaged business enterprises (DBE), as defined in 49 CFR 23, shall have equal opportunity to compete for and perform subcontracts which the contractor enters into pursuant to this contract. The contractor will use his best efforts to solicit bids from and to utilize DBE subcontractors or subcontractors with meaningful minority group and female representation among their employees. Contractors shall obtain lists of DBE construction firms from SHA personnel.

c. The contractor will use his best efforts to ensure subcontractor compliance with their EEO obligations.

9. **Records and Reports:** The contractor shall keep such records as necessary to document compliance with the EEO requirements. Such records shall be retained for a period of three years following completion of the contract work and shall be available at reasonable times and places for inspection by authorized representatives of the SHA and the FHWA.

a. The records kept by the contractor shall document the following:

1. The number of minority and non-minority group members and women employed in each work classification on the project;
2. The progress and efforts being made in cooperation with unions, when applicable, to increase employment opportunities for minorities and women;
3. The progress and efforts being made in locating, hiring, training, qualifying, and upgrading minority and female employees; and
4. The progress and efforts being made in securing the services of DBE subcontractors or subcontractors with meaningful minority and female representation among their employees.

b. The contractors will submit an annual report to the SHA each July for the duration of the project, indicating the number of minority, women, and non-minority group employees currently engaged in each work classification required by the contract work. This information is to be reported on Form FHWA-1391. If on-the job training is being required by special provision, the contractor will be required to collect and report training data.

III. NONSEGREGATED FACILITIES

(Applicable to all Federal-aid construction contracts and to all related subcontracts of $10,000 or more.)

a. By submission of this bid, the execution of this contract or subcontract, or the consummation of this material supply agreement or purchase order, as appropriate, the bidder, Federal-aid construction contractor, subcontractor, material supplier, or vendor, as appro-

priate, certifies that the firm does not maintain or provide for its employees any segregated facilities at any of its establishments, and that the firm does not permit its employees to perform their services at any location, under its control, where segregated facilities are maintained. The firm agrees that a breach of this certification is a violation of the EEO provisions of this contract. The firm further certifies that no employee will be denied access to adequate facilities on the basis of sex or disability.

b. As used in this certification, the term "segregated facilities" means any waiting rooms, work areas, restrooms and washrooms, restaurants and other eating areas, timeclocks, locker rooms, and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees which are segregated by explicit directive, or are, in fact, segregated on the basis of race, color, religion, national origin, age or disability, because of habit, local custom, or otherwise. The only exception will be for the disabled when the demands for accessibility override (e.g. disabled parking).

c. The contractor agrees that it has obtained or will obtain identical certification from proposed subcontractors or material suppliers prior to award of subcontracts or consummation of material supply agreements of $10,000 or more and that it will retain such certifications in its files.

IV. PAYMENT OF PREDETERMINED MINIMUM WAGE

(Applicable to all Federal-aid construction contracts exceeding $2,000 and to all related subcontracts, except for projects located on roadways classified as local roads or rural minor collectors, which are exempt.)

1. **General:**
   a. All mechanics and laborers employed or working upon the site of the work will be paid unconditionally and not less often than once a week and without subsequent deduction or rebate on any account [except such payroll deductions as are permitted by regulations (29 CFR 3) issued by the Secretary of Labor under the Copeland Act (40 U.S.C. 276c)] the full amounts of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment. The payment shall be computed at wage rates not less than those contained in the wage determination of the Secretary of Labor (hereinafter "the wage determination") which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor or its subcontractors and such laborers and mechanics. The wage determination (including any additional classifications and wage rates conformed under paragraph 2 of this Section IV and the DOL poster (WH-1321) or Form FHWA-1495) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers. For the purpose of this Section, contributions made or costs reasonably anticipated for bona fide fringe benefits under Section 1(b)(2) of the Davis-Bacon Act (40 U.S.C. 276a) on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of Section IV, paragraph 3b, hereof. Also, for the purpose of this Section, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs, which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in paragraphs 4 and 5 of this Section IV.
   b. Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein, provided, that the employer's payroll records accurately set forth the time spent in each classification in which work is performed.
   c. All rulings and interpretations of the Davis-Bacon Act and related acts contained in 29 CFR 1, 3, and 5 are herein incorporated by reference in this contract.
2. **Classification:**
   a. The SHA contracting officer shall require that any class of laborers or mechanics employed under the contract, which is not listed in the wage determination, shall be classified in conformance with the wage determination.
   b. The contracting officer shall approve an additional classification, wage rate and fringe benefits only when the following criteria have been met:
      1. the work to be performed by the additional classification requested is not performed by a classification in the wage determination;
      2. the additional classification is utilized in the area by the construction industry;
      3. the proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination; and
      4. with respect to helpers, when such a classification prevails in the area in which the work is performed.
   c. If the contractor or subcontractors, as appropriate, the laborers and mechanics (if known) to be employed in the additional classification or their representatives, and the contracting officer agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by the contracting officer to the DOL, Administrator of the Wage and Hour Division, Employment Standards Administration, Washington, D.C. 20210. The Wage and Hour Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.
   d. In the event the contractor or subcontractors, as appropriate, the laborers or mechanics to be employed in the additional classification or their representatives, and the contracting officer do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the contracting officer shall refer the questions, including the views of all interested parties and the recommendation of the contracting officer, to the Wage and Hour Administrator for determination. Said Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary
   e. The wage rate (including fringe benefits where appropriate) determined pursuant to paragraph 2c or 2d of this Section IV shall be paid to all workers performing work in the additional classification from the first day on which work is performed in the classification.
3. **Payment of Fringe Benefits:**
   a. Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor or subcontractors, as appropriate, shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly case equivalent thereof.

b. If the contractor or subcontractor, as appropriate, does not make payments to a trustee or other third person, he/she may consider as a part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, provided, that the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

4. **Apprentices and Trainees (Programs of U.S. DOL) and Helpers:**

a. Apprentices:

1. Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the DOL, Employment and Training Administration, Bureau of Apprenticeship and Training, or with a State apprenticeship agency recognized by the Bureau, or if a person is employed in his/her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Bureau of Apprenticeship and Training or a State apprenticeship agency (where appropriate) to be eligible for probationary employment as an apprentice.
2. The allowable ratio of apprentices to journeyman-level employees on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any employee listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate listed in the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor or subcontractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman-level hourly rate) specified in the contractor's or subcontractor's registered program shall be observed.
3. Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeyman-level hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator for the Wage and Hour Division determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination.
4. In the event the Bureau of Apprenticeship and Training, or a State apprenticeship agency recognized by the Bureau, withdraws approval of an apprenticeship program, the contractor or subcontractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the comparable work performed by regular employees until an acceptable program is approved.

b. Trainees:

1. Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the DOL, Employment and Training Administration.
2. The ratio of trainees to journeyman-level employees on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed.
3. Every trainee must be paid at not less than the rate specified in the approved program for his/her level of progress, expressed as a percentage of the journeyman-level hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman-level wage rate on the wage determination which provides for less than full fringe benefits for apprentices, in which case such trainees shall receive the same fringe benefits as apprentices.
4. In the event the Employment and Training Administration withdraws approval of a training program, the contractor or subcontractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

c. Helpers:

Helpers will be permitted to work on a project if the helper classification is specified and defined on the applicable wage determination or is approved pursuant to the conformance procedure set forth in Section IV.2. Any worker listed on a payroll at a helper wage rate, who is not a helper under a approved definition, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed.

5. **Apprentices and Trainees (Programs of the U.S. DOT):**

Apprentices and trainees working under apprenticeship and skill training programs which have been certified by the Secretary of Transportation as promoting EEO in connection with Federal-aid highway construction programs are not subject to the requirements of paragraph 4 of this Section IV. The straight time hourly wage rates for apprentices and trainees under such programs will be established by the particular programs. The ratio of apprentices and trainees to journeymen shall not be greater than permitted by the terms of the particular program.

6. **Withholding:**

The SHA shall upon its own action or upon written request of an authorized representative of the DOL withhold, or cause to be withheld, from the contractor or subcontractor under this contract or any other Federal contract with the same prime contractor, or any other Federally-assisted contract subject to Davis-Bacon prevailing wage requirements which is held by the same prime

contractor, as much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of the work, all or part of the wages required by the contract, the SHA contracting officer may, after written notice to the contractor, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

7. **Overtime Requirements:**
No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers, mechanics, watchmen, or guards (including apprentices, trainees, and helpers described in paragraphs 4 and 5 above) shall require or permit any laborer, mechanic, watchman, or guard in any workweek in which he/she is employed on such work, to work in excess of 40 hours in such workweek unless such laborer, mechanic, watchman, or guard receives compensation at a rate not less than one-and-one-half times his/her basic rate of pay for all hours worked in excess of 40 hours in such workweek.

8. **Violation:**
Liability for Unpaid Wages; Liquidated Damages: In the event of any violation of the clause set forth in paragraph 7 above, the contractor and any subcontractor responsible thereof shall be liable to the affected employee for his/her unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory) for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer, mechanic, watchman, or guard employed in violation of the clause set forth in paragraph 7, in the sum of $10 for each calendar day on which such employee was required or permitted to work in excess of the standard work week of 40 hours without payment of the overtime wages required by the clause set forth in paragraph 7.

9. **Withholding for Unpaid Wages and Liquidated Damages:**
The SHA shall upon its own action or upon written request of any authorized representative of the DOL withhold, or cause to be withheld, from any monies payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contractor, or any other Federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph 8 above.

V. STATEMENTS AND PAYROLLS

(Applicable to all Federal-aid construction contracts exceeding $2,000 and to all related subcontracts, except for projects located on roadways classified as local roads or rural collectors, which are exempt.)

1. **Compliance with Copeland Regulations (29 CFR 3):**
The contractor shall comply with the Copeland Regulations of the Secretary of Labor which are herein incorporated by reference.

2. **Payrolls and Payroll Records:**
   a. Payrolls and basic records relating thereto shall be maintained by the contractor and each subcontractor during the course of the work and preserved for a period of 3 years from the date of completion of the contract for all laborers, mechanics, apprentices, trainees, watchmen, helpers, and guards working at the site of the work.
   b. The payroll records shall contain the name, social security number, and address of each such employee; his or her correct classification; hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalent thereof the types described in Section 1(b)(2)(B) of the Davis Bacon Act); daily and weekly number of hours worked; deductions made; and actual wages paid. In addition, for Appalachian contracts, the payroll records shall contain a notation indicating whether the employee does, or does not, normally reside in the labor area as defined in Attachment A, paragraph 1. Whenever the Secretary of Labor, pursuant to Section IV, paragraph 3b, has found that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in Section 1(b)(2)(B) of the Davis Bacon Act, the contractor and each subcontractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, that the plan or program has been communicated in writing to the laborers or mechanics affected, and show the cost anticipated or the actual cost incurred in providing benefits. Contractors or subcontractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprentices and trainees, and ratios and wage rates prescribed in the applicable programs.
   c. Each contractor and subcontractor shall furnish, each week in which any contract work is performed, to the SHA resident engineer a payroll of wages paid each of its employees (including apprentices, trainees, and helpers, described in Section IV, paragraphs 4 and 5, and watchmen and guards engaged on work during the preceding weekly payroll period). The payroll submitted shall set out accurately and completely all of the information required to be maintained under paragraph 2b of this Section V. This information may be submitted in any form desired. Optional Form WH-347 is available for this purpose and may be purchased from the Superintendent of Documents (Federal stock number 029-005-0014-1), U.S. Government Printing Office, Washington, D.C. 20402. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors.
   d. Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor or his/her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:
      1. that the payroll for the payroll period contains the information required to be maintained under paragraph 2b of this Section V and that such information is correct and complete;
      2. that such laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in the Regulations, 29 CFR 3;
      3. that each laborer or mechanic has been paid not less that the applicable wage rate and fringe benefits or cash equivalent for the classification of worked performed, as specified in the applicable wage determination incorporated into the contract.
   e. The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph 2d of this Section V.

f. The falsification of any of the above certifications may subject the contractor to civil or criminal prosecution under 18 U.S.C. 1001 and 31 U.S.C. 231.

g. The contractor or subcontractor shall make the records required under paragraph 2b of this Section V available for inspection, copying, or transcription by authorized representatives of the SHA, the FHWA, or the DOL, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, the SHA, the FHWA, the DOL, or all may, after written notice to the contractor, sponsor, applicant, or owner, take such actions as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

VI. RECORD OF MATERIALS, SUPPLIES AND LABOR THIS SECTION DELETED JUNE 4, 2007.

VII. SUBLETTING OR ASSIGNING THE CONTRACT

1. The contractor shall perform with its own organization contract work amounting to not less than 30 percent (or a greater percentage if specified elsewhere in the contract) of the total original contract price, excluding any specialty items designated by the State. Specialty items may be performed by subcontract and the amount of any such specialty items performed may be deducted from the total original contract price before computing the amount of work required to be performed by the contractor's own organization (23 CFR 635).
   a. "Its own organization" shall be construed to include only workers employed and paid directly by the prime contractor and equipment owned or rented by the prime contractor, with or without operators. Such term does not include employees or equipment of a subcontractor, assignee, or agent of the prime contractor.
   b. "Specialty Items" shall be construed to be limited to work that requires highly specialized knowledge, abilities, or equipment not ordinarily available in the type of contracting organizations qualified and expected to bid on the contract as a whole and in general are to be limited to minor components of the overall contract.
2. The contract amount upon which the requirements set forth in paragraph 1 of Section VII is computed includes the cost of material and manufactured products which are to be purchased or produced by the contractor under the contract provisions.
3. The contractor shall furnish (a) a competent superintendent or supervisor who is employed by the firm, has full authority to direct performance of the work in accordance with the contract requirements, and is in charge of all construction operations (regardless of who performs the work) and (b) such other of its own organizational resources (supervision, management, and engineering services) as the SHA contracting officer determines is necessary to assure the performance of the contract.
4. No portion of the contract shall be sublet, assigned or otherwise disposed of except with the written consent of the SHA contracting officer, or authorized representative, and such consent when given shall not be construed to relieve the contractor of any responsibility for the fulfillment of the contract. Written consent will be given only after the SHA has assured that each subcontract is evidenced in writing and that it contains all pertinent provisions and requirements of the prime contract.

VIII. SAFETY: ACCIDENT PREVENTION

1. In the performance of this contract the contractor shall comply with all applicable Federal, State, and local laws governing safety, health, and sanitation (23 CFR 635). The contractor shall provide all safeguards, safety devices and protective equipment and take any other needed actions as it determines, or as the SHA contracting officer may determine, to be reasonably necessary to protect the life and health of employees on the job and the safety of the public and to protect property in connection with the performance of the work covered by the contract.
2. It is a condition of this contract, and shall be made a condition of each subcontract, which the contractor enters into pursuant to this contract, that the contractor and any subcontractor shall not permit any employee, in performance of the contract, to work in surroundings or under conditions which are unsanitary, hazardous or dangerous to his/her health or safety, as determined under construction safety and health standards (29 CFR 1926) promulgated by the Secretary of Labor, in accordance with Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 333).
3. Pursuant to 29 CFR 1926.3, it is a condition of this contract that the Secretary of Labor or authorized representative thereof, shall have right of entry to any site of contract performance to inspect or investigate the matter of compliance with the construction safety and health standards and to carry out the duties of the Secretary under Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 333).

IX. FALSE STATEMENTS CONCERNING HIGHWAY PROJECTS

In order to assure high quality and durable construction in conformity with approved plans and specifications and a high degree of reliability on statements and representations made by engineers, contractors, suppliers, and workers on Federal-aid highway projects, it is essential that all persons concerned with the project perform their functions as carefully, thoroughly, and honestly as possible. Willful falsification, distortion, or misrepresentation with respect to any facts related to the project is a violation of Federal law. To prevent any misunderstanding regarding the seriousness of these and similar acts, the following notice shall be posted on each Federal-aid highway project (23 CFR 635) in one or more places where it is readily available to all persons concerned with the project:

NOTICE TO ALL PERSONNEL ENGAGED ON FEDERAL-AID HIGHWAY PROJECTS

18 U.S.C. 1020 reads as follows:

"Whoever, being an officer, agent, or employee of the United States, or of any State or Territory, or whoever, whether a person, association, firm, or corporation, knowingly makes any false statement, false representation, or false report as to the character, quality, quantity, or cost of the material used or to be used, or the quantity or quality of the work performed or to be performed, or the cost thereof in connection with the submission of plans, maps, specifications, contracts, or costs of construction on any highway or related project submitted for approval to the Secretary of Transportation; or

Whoever knowingly makes any false statement, false representation, false report or false claim with respect to the character, quality, quantity, or cost of any work performed or to be performed, or materials furnished or to be furnished, in connection with the construction of any highway or related project approved by the Secretary of Transportation; or

Whoever knowingly makes any false statement or false representation as to material fact in any statement, certificate, or report submitted pursuant to provisions of the Federal-aid Roads Act approved July 1, 1916, (39 Stat. 355), as amended and supplemented;

Shall be fined not more that $10,000 or imprisoned not more than 5 years or both."

X. IMPLEMENTATION OF CLEAN AIR ACT AND FEDERAL WATER POLLUTION CONTROL ACT

(Applicable to all Federal-aid construction contracts and to all related subcontracts of $100,000 or more.)

By submission of this bid or the execution of this contract, or subcontract, as appropriate, the bidder, Federal-aid construction contractor, or subcontractor, as appropriate, will be deemed to have stipulated as follows:

1. That any facility that is or will be utilized in the performance of this contract, unless such contract is exempt under the Clean Air Act, as amended (42 U.S.C. 1857 et seq., as amended by Pub.L. 91-604), and under the Federal Water Pollution Control Act, as amended (33 U.S.C. 1251 et seq., as amended by Pub.L. 92-500), Executive Order11738, and regulations in implementation thereof (40 CFR 15) is not listed, on the date of contract award, on the U.S. Environmental Protection Agency (EPA) List of Violating Facilities pursuant to 40 CFR 15.20.
2. That the firm agrees to comply and remain in compliance with all the requirements of Section 114 of the Clean Air Act and Section 308 of the Federal Water Pollution Control Act and all regulations and guidelines listed thereunder.
3. That the firm shall promptly notify the SHA of the receipt of any communication from the Director, Office of Federal Activities, EPA, indicating that a facility that is or will be utilized for the contract is under consideration to be listed on the EPA List of Violating Facilities.
4. That the firm agrees to include or cause to be included the requirements of paragraph 1 through 4 of this Section X in every nonexempt subcontract, and further agrees to take such action as the government may direct as a means of enforcing such requirements.

XI. CERTIFICATION REGARDING DEBARMENT, SUSPENSION, INELIGIBILITY AND VOLUNTARY EXCLUSION

1. **Instructions for Certification - Primary Covered Transactions:**

(Applicable to all Federal-aid contracts - 49 CFR 29)

a. By signing and submitting this proposal, the prospective primary participant is providing the certification set out below.

b. The inability of a person to provide the certification set out below will not necessarily result in denial of participation in this covered transaction. The prospective participant shall submit an explanation of why it cannot provide the certification set out below. The certification or explanation will be considered in connection with the department or agency's determination whether to enter into this transaction. However, failure of the prospective primary participant to furnish a certification or an explanation shall disqualify such a person from participation in this transaction.

c. The certification in this clause is a material representation of fact upon which reliance was placed when the department or agency determined to enter into this transaction. If it is later determined that the prospective primary participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department or agency may terminate this transaction for cause of default.

d. The prospective primary participant shall provide immediate written notice to the department or agency to whom this proposal is submitted if any time the prospective primary participant learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.

e. The terms "covered transaction," "debarred," "suspended," "ineligible," "lower tier covered transaction," "participant," "person," "primary covered transaction," "principal," "proposal," and "voluntarily excluded," as used in this clause, have the meanings set out in the Definitions and Coverage sections of rules implementing Executive Order 12549. You may contact the department or agency to which this proposal is submitted for assistance in obtaining a copy of those regulations.

f. The prospective primary participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency entering into this transaction.

g. The prospective primary participant further agrees by submitting this proposal that it will include the clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transaction," provided by the department or agency entering into this covered transaction, without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions.

h. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant may decide the method and frequency by which it determines the eligibility of its principals. Each participant may, but is not required to, check the nonprocurement portion of the "Lists of Parties Excluded From Federal Procurement or Nonprocurement Programs" (Nonprocurement List) which is compiled by the General Services Administration.

i. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

j. Except for transactions authorized under paragraph f of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency may terminate this transaction for cause or default.

* * * * *

Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion--Primary Covered Transactions

1. The prospective primary participant certifies to the best of its knowledge and belief, that it and its principals:
   a. Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency;
   b. Have not within a 3-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;
   c. Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph 1b of this certification; and
   d. Have not within a 3-year period preceding this application/proposal had one or more public transactions (Federal, State or local) terminated for cause or default.
2. Where the prospective primary participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

* * * * *

2. Instructions for Certification - Lower Tier Covered Transactions:

(Applicable to all subcontracts, purchase orders and other lower tier transactions of $25,000 or more - 49 CFR 29)

a. By signing and submitting this proposal, the prospective lower tier is providing the certification set out below.
b. The certification in this clause is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that the prospective lower tier participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department, or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.
c. The prospective lower tier participant shall provide immediate written notice to the person to which this proposal is submitted if at any time the prospective lower tier participant learns that its certification was erroneous by reason of changed circumstances.
d. The terms "covered transaction," "debarred," "suspended," "ineligible," "primary covered transaction," "participant," "person," "principal," "proposal," and "voluntarily excluded," as used in this clause, have the meanings set out in the Definitions and Coverage sections of rules implementing Executive Order 12549. You may contact the person to which this proposal is submitted for assistance in obtaining a copy of those regulations.
e The prospective lower tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency with which this transaction originated.
f. The prospective lower tier participant further agrees by submitting this proposal that it will include this clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transaction," without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions.
g A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant may decide the method and frequency by which it determines the eligibility of its principals. Each participant may, but is not required to, check the Nonprocurement List.
h. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.
i. Except for transactions authorized under paragraph e of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

* * * * *

Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion--Lower Tier Covered Transactions:

1. The prospective lower tier participant certifies, by submission of this proposal, that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any Federal department or agency.
2. Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

* * * * *

XII. CERTIFICATION REGARDING USE OF CONTRACT FUNDS FOR LOBBYING

(Applicable to all Federal-aid construction contracts and to all related subcontracts which exceed $100,000 - 49 CFR 20)

1. The prospective participant certifies, by signing and submitting this bid or proposal, to the best of his or her knowledge and belief, that:
   a. No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Con-

gress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

b. If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

2. This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by 31 U.S.C. 1352. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

3. The prospective participant also agrees by submitting his or her bid or proposal that he or she shall require that the language of this certification be included in all lower tier subcontracts, which exceed $100,000 and that all such recipients shall certify and disclose accordingly.

GENERAL DECISION NC20100011 03/12/2010 NC11

Z-12

Date: March 12, 2010

General Decision Number NC20100011 03/12/2010

Superseded General Decision No. NC20080011

State: North Carolina

Construction Type: HIGHWAY

COUNTIES:

Alamance	Durham	Orange
Alexander	Forsyth	Randolph
Buncombe	Franklin	Rowan
Burke	Gaston	Stokes
Cabarrus	Guilford	Union
Catawba	Lincoln	Wake
Cumberland	Mecklenburg	Yadkin
Davidson	New Hanover	
Davie	Onslow	

HIGHWAY CONSTRUCTION PROJECTS (does not include tunnels, building structures in rest area projects, railroad construction, and, bascule, suspension and spandrel arch bridges, bridges designed for commercial navigation, and bridges involving marine construction, and other major bridges).

Modification Number	Publication Date
0	03/12/2010

SUNC1990-014 02/12/1990

	Rates	Fringes
CARPENTER	7.63	
CONCRETE FINISHER	7.52	
ELECTRICIAN	10.26	
IRONWORKERS (reinforcing)	9.76	
LABORER		

General	7.25	
Asphalt Lay Down Person	7.25	
Asphalt Raker	7.25	
Form Setter (road)	8.57	
Mason (brick, block, stone)	7.44	
Pipe Layer	7.25	
Power Tool Operator	8.28	

POWER EQUIPMENT OPERATORS		
Asphalt Distributor	7.25	
Asphalt Paver	7.47	
Bulldozer	7.33	
Bulldozer (utility)	7.25	
Concrete Curb Machine	7.25	
Concrete Finishing Machine	7.85	
Concrete Paver	7.25	
Crane, Backhoe, Shovel & Dragline (over 1 yd)	8.16	
Crane, Backhoe, Shovel & Dragline(1 yd and under)	7.25	
Drill Operator	7.34	
Grade Checker	7.25	
Gradeall	8.38	
Grease Person	7.25	
Loader	7.25	
Mechanic	8.47	
Motor Grader (Fine Grade)	8.04	
Motor Grader(Rough Grade)	7.68	
Oiler	7.25	
Roller (Finisher)	7.25	
Roller (Rough)	7.25	
Scraper	7.25	
Screed Asphalt	7.25	
Stone Spreader	7.25	
Stripping Machine Operator	7.25	
Subgrade Machine	7.25	
Sweeper	7.25	
Tractor (Utility)	7.25	

TRUCK DRIVERS		
Trucks – Single Rear Axle	7.25	
Trucks – Multi Rear Axle	7.25	
Trucks – Heavy Duty	9.47	

WELDERS – Receive rate prescribed for craft performing operation to which welding is incidental.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29 CFR 5.5(a)(1)(ii)).

In the listing above, the "SU" designation means that rates listed under that identifier do not reflect collectively bargained wage and fringe benefit rates. Other designations indicate unions whose rates have been determined to be prevailing.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

* an existing published wage determination
* a survey underlying a wage determination
* a Wage and Hour Division letter setting forth a position on a wage determination matter
* a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U. S. Department of Labor
200 Constitution Avenue, N.W.
Washington, D.C. 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, D.C. 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U. S. Department of Labor
200 Constitution Avenue, N.W.
Washington, D.C. 20210

4.) All decisions by the Administrative Review Board are final.

END OF GENERAL DECISION

REVISION TO FHWA-1273 CONCERNING PERSONAL INFORMATION ON PAYROLL SUBMISSIONS

(1-20-09) SP1G59

Revise the *Standard Special Provision FHWA-1273 Required Contract Provisions Federal-Aid Construction Contracts* as follows:

Section V, Paragraph 2b is replaced with the following:

The payroll records shall contain the name, and the last four digits of the social security number of each such employee, his or her correct classification; hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalent thereof the types described in Section 1(b)(2)(B) of the Davis Bacon Act); daily and weekly number of hours worked; deductions made; and actual wages paid.

CERTIFICATION FOR FEDERAL-AID CONTRACTS

(3-21-90) SP1 G85

The prospective participant certifies, by signing and submitting this bid or proposal, to the best of his or her knowledge and belief, that:

(1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

(2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, *Disclosure Form to Report Lobbying*, in accordance with its instructions.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by *Section 1352, Title 31, U.S. Code*. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

The prospective participant also agrees by submitting his or her bid or proposal that he or she shall require that the language of this certification be included in all lower tier subcontracts, which exceed $100,000 and that all such subrecipients shall certify and disclose accordingly.

U.S. DEPARTMENT OF TRANSPORTATION HOTLINE

(11-22-94) SP1 G100

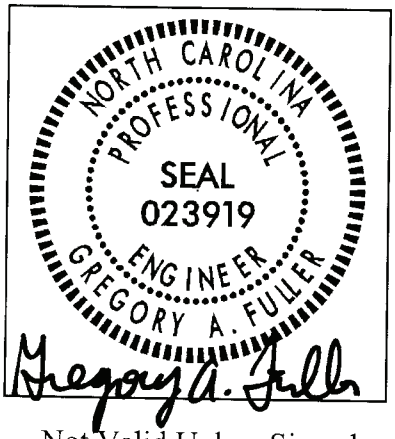
To report bid rigging activities call: **1-800-424-9071**

The U.S. Department of Transportation (DOT) operates the above toll-free *hotline* Monday through Friday, 8:00 a.m. to 5:00 p.m. eastern time. Anyone with knowledge of possible bid rigging, bidder collusion, or other fraudulent activities should use the *hotline* to report such activities.

The *hotline* is part of the DOT's continuing effort to identify and investigate highway construction contract fraud and abuse is operated under the direction of the DOT Inspector General. All information will be treated confidentially and caller anonymity will be respected.

INTELLIGENT TRANSPORTATION SYSTEM VIRTUAL WEIGH STATION SYSTEM PROJECT SPECIAL PROVISIONS

(FOLLOWING PAGES)



Not Valid Unless Signed

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INTELLIGENT TRANSPORTATION SYSTEMS VIRTUAL WEIGH STATION SYSTEM PROJECT SPECIAL PROVISIONS

Contents

1. GENERAL REQUIREMENTS

1.1 DESCRIPTION

A. Summary of Work

Furnish and install an integrated commercial vehicle Virtual Weigh Station System (VWSS) consisting of real-time weight and classification, automated license plate recognition, automated USDOT number recognition, over-height detection, and data collection on US 421 in the two (2) northbound lanes near NC 133 in Wilmington, NC as shown in the Plans. The VWSS will enable the North Carolina State Highway Patrol's (NCSHP) Motor Carrier Enforcement Division to monitor commercial motor vehicle (CMV) traffic remotely from their vehicles on laptop computers or on their office desktop computers through a secure internet connection (furnished by others).

Automate the new VWSS to screen data with the following screening systems currently in use by the NCSHP:

- Commercial Vehicle Information Exchange Window (**CVIEW**)
- Safety and Fitness Electronic Records (**SAFER**)
- Fuel Tax Compliance System (**FuelTaCS**)
- Performance and Registration Information Systems Management **(PRISM)**
- National Crime Information Center **(NCIC)**

System components include:

a. Piezoelectric quartz sensors.

b. Inductive loop detectors.

c. Freeze-frame video cameras.

d. Over-height detection system.

e. VWSS Weigh-In-Motion (WIM) controller system and roadside electronics.

f. Automated license plate recognition (ALPR) with image capture.

g. Automated USDOT recognition (AUR) with image capture.

Prior to construction, furnish documentation that demonstrates to the satisfaction of the Department that all equipment proposed for use in the VWSS is of standard manufacture; that the manufacturer has similar equipment available for purchase; and has a proven acceptable performance history while in use under conditions similar to those for the intended use.

As a minimum, the equipment documentation provided by the Contractor must include the following:

1. Detailed description of how the system requirements will be met.

2. Drawings showing control and display panels with descriptions.

3. Manufacturer's name and model number, supported by descriptive material for (but not limited to) the standard package components with all accessories identified under "Description." Support submittals by descriptive material, such as material submittals, diagrams, and other data published by the manufacturer, to show conformance to specifications and plan requirements.

B. Standard Specifications

Conform to these Project Special Provisions and the North Carolina Department of Transportation (NCDOT) *Standard Specifications for Roads and Structures*, July 2006, herein after referred to as the "*Standard Specifications*". Conform to the Codes and Regulations described in Section 1700 of the *Standard Specifications*.

In the event of conflict between these Project Special Provisions and the *Standard Specifications*, these Project Special Provisions shall govern.

See Plans for a conceptual system block diagram.

Conform to the NC Statewide IT policy and standards as described at http://www.scio.nc.gov/mission/itPoliciesStnadards.aspx. The architecture of the IT modules must be approved by the NC- DOT IT and NC Office of Information Technology architecture groups. A possible architecture is shown in Fig-1 on Page 66 of 66.

C. Material

Certain equipment listed in these Project Special Provisions must be pre-approved on the Department's ITS & Signals Qualified Products List (QPL) by the date of installation. Equipment, material, and hardware not pre-approved when required will not be allowed for use on the project.

The QPL is available on the Department's website at:

http://www.ncdot.org/doh/preconstruct/traffic/ITSS/SMS/qpl/

Ensure all Contractor-furnished equipment, including pieces and components of equipment, hardware, firmware, software, middleware, internal components, and subroutines which perform any date or time data recognition function, calculation, or sequencing will support a four-digit year format for a period of at least 50 years and will support user-definable parameters for setting the start and end dates for daylight savings time.

2. MOBILIZATION

2.1 DESCRIPTION

This work consists of preparatory work and operations, including but not limited to the movement of personnel, equipment, supplies, and incidentals to the project site, for the establishment of offices, buildings, and other facilities necessary for work on the project; the removal and disbandment of

those personnel, equipment, supplies, incidentals, or other facilities that were established for the prosecution of work on the project; and for all other work and operations which must be performed for costs incurred prior to beginning work on the various items on the project site.

2.2 MEASUREMENT AND PAYMENT

Mobilization will be measured and paid for at the contract lump sum price for Mobilization.

Partial payments for the item of "Mobilization" will be made with the first and second partial pay estimates paid on the contract, and will be made at the rate of 50% lump sum price for "Mobilization" on each of these partial pay estimates provided the amount bid for "Mobilization" does not exceed 5 percent of the total amount bid for the contract. Where the amount bid for the item of "Mobilization" exceeds 5 percent of the total amount bid for the contract, 2 ½ percent of the total amount bid will be paid on each of the first two partial pay estimates, and the portion exceeding 5 percent will be paid on the last partial pay estimate.

Payment will be made under:

Pay Item	**Pay Unit**
Mobilization	Lump Sum

3. CONDUIT

3.1 DESCRIPTION

Install underground conduit at locations shown in the Plans. Comply with the Standard Specifications Section 1715 for "Underground Conduit."

3.2 MATERIAL

Install 1", 1.25" and 2" PVC or HDPE in all underground conduit runs as indicated in the Plans. All vertical conduits (entrance to electrical service, equipment disconnect, and pole mounted cabinet) must be rigid galvanized steel.

3.3 CONSTRUCTION METHODS

Use adapters and rigid galvanized steel sweeping elbows to transition from PVC or HDPE conduit to rigid conduit.

3.4 MEASUREMENT AND PAYMENT

Unpaved trenching (qty) (size) will be measured horizontal linear feet of trenching for underground conduit installation of each type furnished, installed, and accepted. Measurement will be along the approximate centerline of the conduit system. Payment will be in linear feet.

Directional Drill (qty) (size) will be measured horizontal linear feet of directional drill for underground conduit installation furnished, installed, and accepted. Measurement will be along the approximate centerline of the conduit system. Payment will be in linear feet.

No measurement will be made of vertical segments, non-metallic conduit, metallic conduit, conduit adapters, conduit bodies, sweeping elbows, conduit couplings, sealing devices, backfill,

miscellaneous fittings, pull lines, seeding and mulching as these will be considered incidental to conduit installation.

Payment will be made under:

Pay Item	**Pay Unit**
Unpaved Trenching (1) (1")	Linear Foot
Unpaved Trenching (1) (2")	Linear Foot
Unpaved Trenching (2) (2")	Linear Foot
Unpaved Trenching (3) (2")	Linear Foot
Directional Drill (2) (1.25")	Linear Foot

4. JUNCTION BOXES

4.1 DESCRIPTION

Furnish and install junction boxes (pull boxes) with covers, graded stone, grounding systems, and all necessary hardware.

4.2 MATERIAL

A. General

Comply with Article 1411-3 Electrical Junction Boxes, except as follows:

Provide junction box covers with standard *Traffic Signal* logos, pull slots and stainless steel pins. Do not provide sealant compound between junction boxes and covers.

Material, equipment, and hardware furnished under this section shall be pre-approved on the Department's QPL.

Refer to Section 545, "Graded Stone," of the *Standard Specifications*.

B. Standard Size Junction Boxes

Provide standard size junction boxes with minimum inside dimensions of 16"(l) x 10"(w) x 10"(d) that meet or exceed the Tier 15 requirements of ANSI/SCTE 77. Provide certification that testing methods are compliant with ANSI/SCTE 77. Vertical extensions of 6" to 12" shall be available from the junction box manufacturer.

C. Oversized Heavy-Duty Junction Boxes

Provide oversized heavy-duty junction boxes and covers with minimum inside dimensions of 30"(l) x 15"(w) x 24"(d) that meet or exceed the Tier 15 requirements of ANSI/SCTE 77. Provide certification that testing methods are compliant with ANSI/SCTE 77.

4.3 CONSTRUCTION METHODS

Comply with Article 1411-3 Electrical Junction Boxes of the *Standard Specifications*, except as follows:

Install junction boxes flush with finished grade. Do not install sealant compound between junction boxes and covers.

Install junction boxes where underground splicing of cable is necessary and where transitioning from below ground to above ground installation or vice-versa.

Install oversized, heavy-duty junction boxes at locations shown in the Plans.

4.4 MEASUREMENT AND PAYMENT

Junction box (_____) will be measured and paid in actual number of junction boxes of each size and type furnished, installed, and accepted.

No measurement will be made of covers, graded stone, and grounding systems as these will be considered incidental to furnishing and installing junction boxes.

Payment will be made under:

Pay Item	**Pay Unit**
Junction Box (Standard Size)	Each
Junction Box (Oversized, Heavy-Duty)	Each

5. ELECTRICAL SERVICE

5.1 DESCRIPTION

Furnish and install electrical equipment as shown in the Plans. Comply with the National Electrical Code (NEC), the National Electrical Safety Code (NESC), the Standard Specifications, the Project Special Provisions, and all local ordinances. Coordinate all work involving electrical service with the appropriate local utility company and the Division 3 Engineer or his designated representative at (910) 251-5724 before any work begins.

5.2 MATERIAL

A. Equipment Disconnect

Provide a new disconnect at the location shown in the Plans to de-energize the transformer. Furnish and install a 50 ampere circuit breaker with a minimum of 10,000 RMS symmetrical amperes short circuit current rating in a lockable NEMA 3R enclosure. Ensure the disconnect is listed as meeting UL Standard UL-489. Fabricate enclosure from galvanized steel and electrostatically apply dry powder paint finish, light gray in color, to yield a minimum thickness of 2.4 mils. Provide ground bus and neutral bus with a minimum of four terminals with minimum wire capacity range of number 12 through number 2 AWG.

B. Single Phase General Purpose Transformer

Furnish and install a double-wound, dry type general purpose transformer to isolate the line side voltages from the load side voltages as shown on the Plans. Provide the transformer with the following specifications:

- Primary Volts: 120/240 with 83/41 Amps Max. 60Hz.
- Secondary Volts: 120/240 with 83/41 Amps Max. 60Hz.
- 10 kVA power rating.

- Electrostatic shielding between primary and secondary windings.
- Epoxy-silica encapsulated core and coil.
- Copper windings and copper lead wire terminations.
- Multiple front and bottom knockout for conduit entry/exit.
- Ground studs for conduit bonding.

Provide the transformer in a NEMA 3R enclosure suitable for mounting to a metal pole.

C. 3-Wire Stranded Copper Feeder Conductors

Furnish 3-wire stranded copper feeder conductors with THWN rating for supplying power to the transformer. Provide conductors with black and green insulation intended for power circuits at 600 Volts or less and complies with the following:

- Listed as meeting UL Standard UL-83.
- Meets ASTM B-3 and B-8 or B-787 standards.

D. 4-Wire Stranded Copper Feeder Conductors

Furnish 4-wire stranded copper feeder conductors with THWN rating for supplying power to the VWSS field equipment cabinet. Provide conductors with black, red, white, and green insulation intended for power circuits at 600 Volts or less and complies with the following:

- Listed as meeting UL Standard UL-83.
- Meets ASTM B-3 and B-8 or B-787 standards.

E. Grounding System

Furnish 5/8”x10’ copper clad steel grounding electrodes (ground rods), #4 AWG solid bare copper grounding conductors, and exothermic welding kits for grounding system installation. Comply with the NEC, Standard Specifications, these Project Special Provisions, and the Plans.

5.3 CONSTRUCTION METHODS

Permanently label cables at all access points using nylon tags labeled with permanent ink. Ensure each cable has a unique identifier. Label cables immediately upon installation. Use component name and labeling scheme approved by the Engineer.

A. Equipment Disconnect

As shown on the Plans, furnish and install an equipment disconnect. Bond the disconnect in accordance with the NEC. Route the conductors from the disconnect to the primary terminals of the transformer in rigid galvanized steel conduit. Ensure that the grounding system complies with the grounding requirements of these Project Special Provisions, the Standard Specifications, and the Plans.

B. Single Phase General Purpose Transformer

As shown on the Plans, furnish and install a single phase general purpose transformer in a NEMA 3R enclosure. Route the conductors from the transformer secondary to the VWSS equipment cabinet. Provide all mounting hardware and other parts and labor necessary to successfully install the transformer.

C. 3-Wire Stranded Copper Feeder Conductors

At locations shown in the Plans, install 3 THWN stranded copper feeder conductors to supply 240 VAC to the transformer. Comply with the Standard Specifications and Standard Drawings and all applicable electrical codes.

D. 4-Wire Stranded Copper Feeder Conductors

At locations shown in the Plans, install 4 THWN stranded copper feeder conductors to supply 240/120 VAC to the VWSS field equipment cabinet. Comply with the Standard Specifications and Standard Drawings and all applicable electrical codes.

E. Grounding System

Install grounding electrodes as shown in the Plans and connect the #1 AWG grounding conductors to the ground rods using an exothermic welding process. Test the system to ensure a ground resistance of 20-ohms or less is achieved. Drive additional ground rods as necessary or as directed by the Engineer to achieve the proper ground resistance.

5.4 MEASUREMENT AND PAYMENT

Equipment disconnect will be measured and paid as the actual number of complete functional equipment cabinet disconnect locations furnished, installed and accepted. Breakers, and exposed vertical conduit runs to the cabinet, ground rods, ground wire and any remaining hardware and conduit to connect the equipment cabinet disconnect to the cabinet will be considered incidental to the equipment cabinet disconnect.

Single phase transformer will be measured and paid in actual number of complete and functional single phase general purpose transformer locations furnished, installed and accepted. Enclosures and mounting hardware will be considered incidental to the single phase transformer.

3-Wire copper feeder conductors will be measured and paid as the actual linear feet of 3-wire THWN stranded copper feeder conductors furnished, installed and accepted. Payment is for all three conductors. Measurement will be for the actual linear footage of combined conductors after all terminations are complete. No separate payment will be made for each individual conductor. No separate payment will be made for different wire sizes. No payment will be made for excess wire in the cabinets.

4-Wire copper feeder conductors will be measured and paid as the actual linear feet of 4-wire THWN stranded copper feeder conductors furnished, installed and accepted. Payment is for all four conductors. Measurement will be for the actual linear footage of combined conductors after all terminations are complete. No separate payment will be made for each individual conductor. No separate payment will be made for different wire sizes. No payment will be made for excess wire in the cabinets.

5/8" X 10' grounding electrode (ground rod) will be measured and paid as the actual number of 5/8" copper clad steel ground rods furnished, installed and accepted. No separate payment will be made for exothermic welding kits as they will be considered incidental to the installation of the ground rods.

Payment will be made under:

Pay Item	Pay Unit
Equipment Disconnect	Each
Single Phase Transformer	Each
5/8”X10’ Grounding Electrode	Each
3-Wire Copper Feeder Conductors	Linear Feet
4-Wire Copper Feeder Conductors	Linear Feet
#4 AWG Solid Bare Copper Grounding Conductor	Each

6. VIRTUAL WEIGH STATION ELECTRONICS

6.1 DESCRIPTION

Furnish and install the VWSS electronics, along with inductive loops, piezoelectric quartz sensors, over-height vehicle detection system, ALPR system, AUR system, and freeze-frame video camera to work as a single, integrated system in the creation of vehicle records and in the processing of commercial vehicles.

Furnish and install the VWSS electronics with all necessary hardware and software in accordance with the Plans and Project Special Provisions.

6.2 MATERIAL

A. General

Furnish the VWSS electronics with the interface and signal conditioning for inductive loops, piezoelectric quartz sensors, over-height vehicle detection system, ALPR system, AUR system, and freeze-frame video camera, and an integral power supply within a single chassis. Integrate these components into a process controller. Provide all material necessary for set-up and operation of the system, including all mounting hardware and cabling. Provide the VWSS with the required software pre-loaded so that it will automatically execute when the system is powered up. Furnish electronics modular in design to facilitate easy maintenance, troubleshooting and on-site servicing. Furnish firewall protection between the field equipment cabinet electronics and the internet service provided by others.

B. WIM Controller

Furnish and install a WIM Controller in the VWSS equipment cabinet with the necessary hardware and firmware to collect and disseminate the VWSS data required in these Project Special Provisions. The WIM Controller must serve as database management for the data collected at the VWSS. Furnish all database management software licensed appropriately for the anticipated usage.

The Contractor must provide written documentation of all software installed on the WIM Controller. All Contractor installed software licenses must be transferred to the Department prior to the end of the Observation Period. One (1) copy of the system software must be provided on compact disks with install and setup instructions.

C. Ethernet Switch and Network Router

Provide a 10/100BaseT network switch with at least 9 RJ45 10/100 network ports (8ports and one uplink port). Furnish a network switch that operates over a temperature range of at lease -40ºF to 158ºF. Include mounting hardware and appropriate cabling. Provide a network router that is integral/integrated with the network switch. Furnish a network router that interfaces to both a Frame Relay T1 circuit and a telephone company provided Ethernet connection. Furnish an external interface port with a built-in stateful packet inspection firewall and Network Address Translation (NAT) Functions.

D. Uninterruptible Power Supply (UPS)

Furnish and install an uninterruptible AC power supply for the equipment cabinet and equipment contained herein. When submitting material submittals for this item, provide calculations to show that it has capacity, plus an additional 50%, to power the WIM controller during a power outage lasting ten minutes. Furnish a line interactive type power supply. Provide indicators and contact closure outputs for AC power on, rectifier failure, and low voltage disconnect. Provide a UPS that signals the WIM controller that a power failure has occurred so that the WIM controller can automatically shut down before losing power. Mount the UPS in the rack cabinet inside the roadside equipment cabinet.

E. Frame Grabber

Furnish a frame grabber card inserted in the WIM Controller. When triggered by the VWSS software, it captures a frame of the video coming from the freeze-frame camera, digitizing it and storing it in memory. Ensure that the frame grabber captures video of commercial vehicles in both northbound lanes.

6.3 CONSTRUCTION METHODS

Prior to installing the VWSS electronics, submit and receive approval of a plan for installing the new VWSS equipment. Allow a maximum of 30 days for the review of all material submittals. In addition, successfully complete the “table top” test at the Contractor’s facility (see Section 18) on the new equipment and software prior to installation.

6.4 MEASUREMENT AND PAYMENT

VWSS Electronics will be paid at the contract lump sum price for VWSS Electronics. Contract work includes the WIM controller, Ethernet router, software, frame grabber, uninterruptible power supply and interfaces for piezoelectric quartz sensors, inductive loops, ALPR, AUR, and the over-height detectors. The work includes all materials, cabling, electrical conductors, integration, documentation, and testing.

Payment will be made under:

Pay Item	**Pay Unit**
VWSS Electronics	Lump Sum

7. PIEZOELECTRIC QUARTZ SENSORS

7.1 DESCRIPTION

Furnish and install the piezoelectric quartz sensors (PQS) with all necessary hardware and software in accordance with the Plans and Project Special Provisions. Ensure that the PQS meets or exceeds the performance criteria of Type I Weigh-In-Motion Systems, ASTM E 1318-02 Standard Specification for Highway WIM Systems with User Requirements and Test Methods.

7.2 MATERIAL

Install piezoelectric quartz sensors manufactured by Kistler Instruments, or approved equivalent. Furnish PQS that have an uncompensated temperature coefficient of sensitivity of no more than +/- 0.02%/ºC.

Ensure that the PQS automatically and accurately weigh, with the tolerances set forth herein, each axle of a multi-axle vehicle and calculate the gross weight of the vehicle by summing the individual axle weights. Check each vehicle having a gross weight of 26,000 pounds for compliance with the Bridge Formula Weights (GS20-118) as defined by the Federal Highway Administration. Ensure that the PQS perform these measurements and calculations while the vehicle passes over the PQS but not to exceed 5 seconds.

Accurately establish the gross and individual axle weights of each vehicle within the error limits listed in Table 1. Ensure these error lists are maintained within a confidence level of two standard deviations (96%) for a minimum sample of 50 vehicles. The sample vehicles consist of a variety of multiple-axle trucks passing over the sensors at speeds ranging from a minimum of 10 mph to a maximum of 65 mph. Tank trucks, livestock, car haulers and those vehicles whose suspension characteristics are determined to affect the scale performance will not be included in the sample nor trucks whose speed varies by 10% or more.

PARAMETER	TOLERANCE
Single Axle Weight	± 15% of actual weight
Axle Group Weight (2 or more)	± 10% of actual weight
Gross Weight	± 6% of actual weight
Axle Spacing	± 6 inches
Vehicle Speed	± 2 mph

Table 1 - PQS Accuracy

The actual weight is defined as that vehicle weight established by static weighing on a multi-platform truck scale properly operating within the appropriate tolerance as established for a Class IIIL device as defined by the National Institute of Standards and Technology Handbook 44. Furnish PQS that operate over an ambient temperature range of -40 to +57 degrees C with 10 to 100% humidity.

Supply a list of at least five installations where PQS systems have been installed in similar environmental conditions with the same or higher traffic volume and speeds for a minimum of five years. Also supply clients' contact information for the five installations.

Furnish PQS that perform the following functions:

- Operate at vehicle speeds between 5 and 70 mph.
- Determine the compliance of each vehicle based on single-axle weight, axle group weight, and GVW.
- For each vehicle in excess of 26,000 pounds Gross Vehicle Weight (GVW), determine the compliance of the on-sensor vehicle with the Bridge Formula.
- Store data (including images) by truck classification broken down by day, month, and calendar year.
- Downloading all data stored on its internal or external storage device.
- Receiving executable control command.

Suitably demonstrate that the PQS system will provide a service life exceeding 7 years. This can be provided by documented customer feedback on operating sites in use and by life cycle cost evaluation.

7.3 CONSTRUCTION METHODS

A. General

Install piezoelectric quartz sensors as shown in the Plans and as recommended by the manufacturer. **Use waterproof sealing grout/epoxy recommended by the manufacturer and approved by the Department.**

Furnish PQS configurations that consist of two sets (4 sensors per set) of piezoelectric quartz sensors in a single traffic lane, as shown in the Plans. Configure each sensor set to occupy the entirety of the 12' lane and positioned such that each sensor set weighs one side of the vehicle thus obtaining weight information sufficient to determine any side-to-side balance condition of the vehicle. Mount PQS precisely flush with the surface of roadway. Furnish PQS sensors no larger than 3.5" wide and extend no deeper than 2.8." Seal PQS and associated coaxial cable to prevent moisture penetration. Install PQS in such a manner that they will not be damaged by road maintenance such as snow removal.

Piezoelectric quartz sensor saw slots, including tail and lead-in sections, must be **DRY CUT**. Wet cuts will not be allowed. The slots must be dry and free of loose material before grouting is installed.

Place the assembled sensor row into the grout carefully. Remove excess grout and place weights on the sensors to hold the sensor row in place. After the grout has completely cured, grind the grout and sensor surface to leave a finish that is completely flush with the surrounding pavement.

Furnish on-site engineering consulting by the manufacturer for the installation of the PQS.

B. Calibration and Acceptance

Perform calibration using a single calibration truck. Furnish a five (5) axle tractor/trailer combination (3S2), complete with air ride suspension and a non-shifting static load as the test vehicle. Load the truck to within 90 to 100% of allowable GVW for the test period.

Conduct the calibration procedure as follows:

- Weigh the vehicle weight using the portable static weigh scale furnished by the NCSHP. Furnish documentation that the portable static weigh scale is calibrated according to the manufacturer's directions. Record the weight information on the front (single axle), drive (tandem axle group), and trailer (tandem axle group). Calculate the GVW of the vehicle by adding the three weights together.
- Measure and record the distance between the five (5) individual axles on the truck.
- Use a test vehicle and make three (3) test passes over the system under test at a selected speed which is indicative of the truck traffic at the site. Make adjustments on site during this time to fine tune the axle spacing and weight output of the VWSS.
- Once all initial adjustments have been made, make two (2) additional test passes with the test vehicle to confirm the accuracy of the adjustments. If all the readings fall within the required ASTM ranges cited in these Project Special Provisions, continue the tests. If this is not the case, make additional adjustments and make two (2) more confirming passes with the test truck.

Demonstrate through the acceptance tests that the system passes all criteria according to ASTM E1318 Standard, achieving ASTM accuracy for Type I WIM systems. Perform the acceptance test as follows:

- Using the test truck, make an additional ten (10) passes at a selected speed that is indicative of the truck traffic at the test site.
- Place all of the data into a spreadsheet with the approval of the Department.
- Calculate the mean error and standard deviation for all recorded measurements at the end of the ten (10) test passes. Perform the calculations as follows:

  For weight measurements, calculate the percent error for each test pass using the following formula:

  [(WIM Weight - Static Weight)/Static Weight] x 100 = % error

  Calculate the mean error for each weight type (single, group, GVW) as follows (with each weight type calculated individually):

  - % errors for single, group or GVW/# of samples = Mean error
  - Calculate the error for individual axle spacings using the following formula (each of the four axle spacings calculated individually)
  - 10 of [(WIM Axle Spacings - Actual Axle Spacing)]/10 = Mean Axle Spacing Error
- Enter all of the calculated errors into the spreadsheet

- Check the calculated result against the acceptable range for the ASTM values. There will be one of two results:
  - — If 95% of all recorded test results, (single axles, axle groups, GVW, axle spacing) fall within the ASTM specified tolerance then the system will have passed the requirements, or
  - — If less than 95% of the calculated differences fall within the ASTM specified tolerance then readjust the system make and an additional ten (10) test passes to retest the system.

7.4 MEASUREMENT AND PAYMENT

Piezoelectric quartz sensors (set) will be measured and paid in actual number of furnished, installed, and accepted complete piezoelectric quartz sensor set (4 sensors per set) configurations. No measurement will be made for cables, amplifiers, epoxy, temperature sensors, electrical conductors, or conduit fittings as this will be considered incidental to furnishing and installing the piezoelectric quartz sensors.

Payment will be made under:

Pay Item	**Pay Unit**
Piezoelectric Quartz Sensors (Set)	Each

8. INDUCTIVE DETECTION LOOPS

8.1 DESCRIPTION

Furnish and install inductive detection loops with loop slot sealant, loop wire, conduit with fittings, and all necessary hardware.

8.2 MATERIAL

Material, equipment, and hardware furnished under this section shall be pre-approved on the Department's QPL.

A. Loop Sealant

Provide loop slot sealant that completely encapsulates loop wire when installed according to manufacturer's instructions. Provide loop sealant that does not generate temperatures greater than 220 degrees F. Ensure sealant bonds with asphalt and concrete pavement saw slots so sealant and encapsulated loop wire do not come out of slot. Ensure sealant is self-leveling, but with sufficient viscosity to prevent exit from saw slot when installed along a ten percent grade.

Provide sealant that protects loop wire by preventing the entrance of dirt, water, rocks, sticks, and other debris into saw slot, and is resistant to traffic, water, gasoline, chemical and chemical fumes, mild alkalis, oils, and mild acids. Ensure sealant will not be affected by water and sealant does not chemically interact with pavement and loop wire insulation.

Ensure loop sealant has sufficient flexibility to permit expected pavement expansion and contraction due to weather and to permit pavement movement due to traffic without cracking for a temperature range of -40 to 160 degrees F.

Provide sealant with a usable life of at least ten minutes once mixed, when the ambient temperature is 75 degrees F. Ensure sealant dries to tack free state in less than two hours, and does not flow within or out of saw slot after exposed surface has become tack free. Tack free time will be determined by testing with a cotton ball until no sealant adheres to cotton ball and no cotton adheres to sealant.

Ensure two part sealant cures within 48 hours to attain 95 percent of published properties for the cured material.

Ensure one part sealant cures within 30 days to attain 95 percent of published properties for the cured material.

B. Loop Wire

Provide loop wire composed of 19-strand conductor insulated by a cross-linked polyethylene compound. Ensure insulated conductors are completely encased in tubes of low density polyethylene compound. Print manufacturer's name, manufacture year, and any applicable part number on encasing tube at intervals of 2 feet or less.

Provide # 14 AWG copper conductors fabricated from 19 strands that comply with ASTM B 3 before insulating. Ensure stranded conductors use either concentric or bunch stranding, and comply with circular mil area and physical requirements of ASTM B 8 or ASTM B 174 for bunch stranding.

Provide insulating compound that is cross-linked thermosetting black polyethylene (ASTM D 2655). Ensure insulation is applied concentrically about conductor. Provide insulation thickness not less than 0.026" at any point and minimum average thickness of 0.030" as measured by UL Standard 62.

Ensure insulation of finished conductor will withstand application of a 60 Hertz or 3000 Hertz, 7500 volt (RMS) essentially sinusoidal spark test potential as specified in UL Standard 83.

Provide insulated conductors that are factory-installed in protective encasing tube that comply with the following:

Encasing tube fabricated of polyethylene compound conforming to ASTM D 1248
for Type I, Class C, Grade E5.

Minimum inside diameter of 0.150"
Wall thickness of 0.040" ± 0.010"
Outside diameter of 0.240" ± 0.010" Conduit

C. Conduit

Comply with the Underground Conduit section of these Project Special Provisions for non-metallic conduit.

8.3 CONSTRUCTION METHODS

All work performed in this section shall be done in the presence of the Engineer.

Notify Engineer one week before installing inductive detection loops.

Inductive loop saw slots, including tail and lead-in sections, must be **DRY CUT**. Wet cuts will not be allowed. The slots must be dry and free of loose material before installing sealant.

Before sawcutting, pre-mark inductive detection loop locations and receive approval. Do not allow vehicles to travel over unsealed loop slots.

Install conduit with bushings from edge of pavement to junction box.

Remove all loose material in saw slots with a high-pressure method using compressed air. Clear saw slots of jagged edges and protrusions. Seat loop conductor at bottom of saw slot without damaging loop wire.

Before sealing loop conductors, test that impedance from the loop wire to ground is at least 100 megohms. For each inductive loop installed, submit a completed Inductive Detection Loop & Grounding Test Results form and place copy in controller cabinet. Ensure all loops are included on form. The form is located on the Department's Web site.

Embed loop conductors in saw slot with loop sealant. Seal saw slot and dispose of excess sealant in an environmentally safe manner. Provide Engineer with Material Safety Data Sheet and manufacturer's test data.

Twist loop conductor pairs a minimum of 5 turns per foot from where conductors leave saw slot to junction box. Permanently label each twisted pair in the junction box with nylon cable tie using indelible ink. Indicate loop number and loop polarity on the tie.

8.4 MEASUREMENT AND PAYMENT

Inductive loop sawcut will be measured and paid as the actual linear feet of inductive loop sawcut furnished, installed, and accepted.

No measurement will be made of loop slot sealant, loop wire, conduit, and conduit fittings as these will be considered incidental to furnishing and installing inductive detection loops.

Payment will be made under:

Pay Item	**Pay Unit**
Inductive Loop Sawcut	Linear Foot

9. OVER-HEIGHT VEHICLE DETECTION SYSTEM

9.1 DESCRIPTION

A. General

Furnish and install the over-height detection system with metal poles and all necessary hardware in accordance with the Plans and Special Provisions.

The over-height vehicle detection system assembly consists of a transmitter and a receiver, mounted on metal poles on either side of the roadway. A beam of infrared light from the transmitter is aimed at two light detectors in the receiver. When the light reaching the two detectors is interrupted in the proper sequence, the receiver closes an electrical contact. The transmitter and receiver are mounted at such a height that over-height vehicles break the beam but other vehicles do not. The receiver's contact closure output is connected to the WIM controller in the VWSS equipment cabinet, and any truck breaking the beam is flagged as over-height in the message about the truck that the VWSS WIM controller sends to the reporting data.

B. Accuracy and Performance

Furnish detectors that detect a two-inch diameter object that is one inch above the detection height when the object is moving at any speed between 5 mph and 70 mph.

9.2 MATERIAL

A. Transmitter and Receiver

Furnish the transmitter and receiver with the following characteristics:

- Power: 120 VAC power.
- Output: Form C dry relay contact closure with contacts rated 115 VAC, 10 amps. Protected by an 8 amp circuit breaker.
- Weight : 30 pounds or less, each unit.
- Operating temperature: -40° F to +135° F.
- Response: within 1 second of beam break.
- Enclosure: NEMA 6P, ALMAG casting and sheet aluminum at least 1/8-inch thick.
- Two LEDs, bore sight, and meter for alignment.
- Bird perch denial rod for each eye cone.
- Range: 700 feet under ideal conditions; 200 feet in bad weather.

Furnish the transmitter and receiver with mounting hardware, power and communication cables, connectors, and power connection. The equipment must not disturb traffic nor be susceptible to external lighting conditions or typical rain and snow events.

B. Over-height Detector Pole

Mount the over-height detector receiver and transmitter units to a galvanized steel pole conforming to Section 1404 of the Standard Specifications with the following modifications to the standard:

- Bracket arms and transformer bases are not required.
- Design the pole to support the over-height detection equipment specified herein.
- Furnish the pole with a height as shown in the Plans.

C. Over-height Detector Pole Foundation

Mount the over-height detector pole on a standard foundation as defined in Section 1405 of the Standard Specifications. Design the foundation type and depth. Submit drawings for approval by the Department.

9.3 CONSTRUCTION METHODS

Install the over-height vehicle detectors and align in accordance with the recommendations of the detector manufacturer. Field verify the detector's mounting height to assure that the infrared beam is transmitted at 13'-6" above the lowest point in the travel lane equipped with the sensors.

9.4 MEASUREMENT AND PAYMENT

Over-height Vehicle Detection System will be measured and paid as the actual number of over-height vehicle detectors, detector metal poles and detector pole foundations, furnished, installed and accepted. Payment includes detectors, metal poles and detector pole foundations.

No measurement will be made for mounting hardware, cables, electrical conductors, connectors, surge protectors, documentation, and testing as these will be considered incidental to furnishing and installing over-height vehicle detectors.

Payment will be made under:

Pay Item	**Pay Unit**
Over-height Vehicle Detection System	Each

10. FREEZE-FRAME CAMERA ASSEMBLY EQUIPMENT

10.1 DESCRIPTION

Furnish and install freeze-frame camera assembly equipment with all necessary hardware, cabling and software in accordance with the Plans and Project Special Provisions.

The freeze-frame camera assembly will be used to send video snapshots of vehicles to the Motor Carrier Enforcement staff through the appropriate program, so that they can easily associate the measured weight and dimensional violations with specific trucks, and so that they can easily identify violators. Configure the freeze-frame camera to provide snapshot video of vehicles in both northbound travel lanes if there is an occurrence of two commercial vehicles approaching the VWSS electronics simultaneously.

10.2 MATERIAL

A. Dual Channel CCTV Camera

Furnish cameras that comply with the following:

- Dual Channel Design:
  - Color - Day
  - Black & White - Night (with a Self-illuminating Infrared [IR]) light source)

The IR illuminator must not disturb traffic nor be susceptible to external lighting conditions or typical rain and snow events.

- Lens:
  - 40-240mm afl Auto Iris Motorized Zoom (Day Channel)
  - 40-240mm afl Motorized Zoom (Night Channel)
- Light Sensitivity:
  - 2 lux w/Digital Backlight Compensation (Day Channel)
  - 0.6 lux (Night Channel)

  - Faceplate
- Horizontal Resolution:
  - 480 Lines (Day Channel)
  - 570 Lines (Night Channel)
- Signal to Noise Ratio:
  - 50dB (Day Channel)
  - 46dB (Night Channel)
- Geometric Distortion: None
- Video Output: 1.0 Vp-p NTSC Composite, 75 ohms/BNC
- Humidity: 100%
- Operating Temperature Range: -58° F to +140° F w/ sun shield
- Enclosure - All aluminum weather proof enclosure complete with thermostat, heater, blower and defrost/defogger
- Power Input:
  - 24 VAC + 5%
  - 34 Watts (At night w/heater and blower engaged)

B. Camera Housing

Furnish the camera housing to meet the following requirements:

- Fabricate from corrosion resistant aluminum, finished in a neutral color of weather resistant enamel or polyester powdercoat.
- Equipped with tempered glass front window.
- Equipped with sunshield.
- Equipped with surge suppressors on all ungrounded conductors. Furnish video surge suppressors specifically for coaxial video transmission lines.
- Include mounting hardware to match mounting bracket.

Purge the enclosure of air and pressurized to at least 5 psi with dry nitrogen. Furnish each enclosure with a Schrader valve for pressurization and an overpressure relief valve. Provide an enclosure with a housing leak rate of less than 2 psi per year. Affix a decal stating that the unit is pressurized and that safety precautions are to be observed to the rear housing plate. Provide a pressure tight connector receptacle for connection of the camera and lens control cable. Furnish all external connections that are watertight.

C. Mounting Bracket

Provide the camera mounting bracket to be a horizontal arm that attaches to a vertical pole, which meets the following requirements:

- Cable feed through hole.
- Maximum supported weight: 40 lbs.
- Mounted on a vertical pole.
- Separation between center of camera housing and pole: 15 inches.
- Attachment to pole: a minimum of two (2) stainless steel bands, approximately (5) five inches apart.
- Pan adjustment: unlimited (360 degrees).
- Tilt adjustment: +/- 75 degrees.
- All aluminum with polyester powdercoat finish.

D. Cables

Provide a composite cable carrying power and video between the camera housing and the base-mounted equipment cabinet. Use coaxial conductors for the video. Size the power and video conductors to correspond to the load and the distance. Furnish cable recommended by the manufacturer for conduit installation. Furnish crimp-on type connectors. Terminate the video conductors in the equipment cabinet on surge protectors like those in the camera housing.

E. Freeze-Frame Camera Pole

Mount the freeze-frame cameras to the galvanized steel pole conforming to Section 1404 of the Standard Specifications with the following modifications:

- Bracket arms and transformer bases are not required.
- Supports the freeze-frame camera equipment specified herein.
- Furnish the pole with a height recommended by manufacturer.

10.3 CONSTRUCTION METHODS

Ensure that the camera is aimed to provide optimum coverage. Adjust the camera's position as necessary until the Department agrees that the position is optimal from the point of view of the users. Also, adjust the light threshold for the color/monochrome video switch as necessary until the Department agrees that the threshold is optimal from the point of view of the users.

Furnish documentation ensuring that the IR camera illumination is certified to be "eye safe" by an independent testing agency.

10.4 MEASUREMENT AND PAYMENT

Freeze-frame camera assembly will be measured and paid as the actual number of freeze-frame cameras assemblies furnished, installed and accepted. No separate measurement will be made for the IR illuminators, cabling, connectors, attachment assemblies, condulets, grounding equipment, surge protectors, or any other equipment required to install the freeze-frame camera assembly as these will be considered incidental to furnishing and installing the freeze-frame camera assembly. Freeze-frame camera poles will be measured and paid for as described in Section 15.

Payment will be made under:

Pay Item	**Pay Unit**
Freeze-Frame Camera Assembly	Each

11. AUTOMATED LICENSE PLATE RECOGNITION (ALPR) SYSTEM

11.1 DESCRIPTION

Furnish and install an automated license plate reader (ALPR) system with all necessary hardware, cabling, database search engines, and software in accordance with the Plans and Project Special Provisions. The system must capture CMV license plates for each travel lane in the northbound direction of the VWSS.

Integrate the ALPR system into the Central Controller Software as described in Section 12.

Furnish an ALPR system that produces multiple state and alphanumeric license plate interpretations per vehicle with varying flash, shutter and gain settings to ensure a high quality image regardless of weather or lighting conditions. At a minimum, the ALPR system must read and interpret license plates from the following states:

1) North Carolina
2) South Carolina
3) Virginia
4) Florida
5) Georgia
6) Tennessee
7) Indiana
8) Pennsylvania
9) Illinois
10) Ohio
11) Texas
12) New Jersey

The system must provide effective license plate capture at night using IR illuminators and no other external lighting source.

Furnish ALPRs that can identify and interpret up to 2 license plates simultaneously in the field of view.

Furnish an ALPR system with a plate read rate better than 80% (all characters correctly read for 80% of readable license plates) at speeds up to 60 miles per hour.

Provide a system with an operator interface to include database remote query functionality.

Provide at least one reference from an accredited law enforcement agency currently using the proposed ALPR system in a non-static weigh station application.

11.2 MATERIAL

A. Camera

Furnish two ALPR cameras (one over each travel lane) that comply with the following:

- Self-illuminating Infrared (IR) illuminators utilizing driver safe non-visible light (greater than 700nm) and only activated when images are being captured.
- IR light-emitting diodes (LEDs) utilized must be "pulsed" to enhance license plate capture.
- IR camera illumination certified to be "eye safe" by an independent testing agency.
- Ultra high resolution with dual color/black white image capture and digital signal processing to reduce color noise.
- Enhanced low light resolution (1.2 million pixels).
- Shutter speed of 1/10,000 sec exposure setting.
- Vibration resistance: 10G (20Hz-200Hz).
- Integrate the camera and ALPR processor into a single, sealed housing enclosure that is impervious to weather and environmental elements and tested to IP68 standards.
- Produces multiple license plate images, with no moving parts in the dual-lens cameras, per vehicle with varying flash, shutter and gain settings to ensure a high quality image regardless of weather or lighting conditions. Lens must capture up to 60 frames per second.
- Integrated ALPR processor with hardware AES encryption to NIST FIPS 197 with optional hardware data encryption.
- Weighing no more than 15 lbs. and operating on less than 25W, 48V DC power with an external trigger mode and a "self trigger mode" to detect the presence of a CMV license plate in the camera's field of view.
- Operates during typical rain and snow events.

B. ALPR System Software

Integrate the ALPR System Software into the VWSS Software. Furnish the ALPR system software meeting the following requirements:

- Provide variants of the Optical Character Recognition (OCR) engine that are designed specifically for NC and regional license plates. Provide OCR updates for new plate designs as required.
- Utilizes internal camera controls to facilitate automated settings for optimum flash, gain and shutter configurations.
- Integrates into a wide variety of systems via relay output, RS232, TCP/IP Ethernet with socket and FTP protocols, as well as IP connectivity.

- Offer standard software JPEG compression, with optional hardware JPEG compression.
- Fully web-enabled and IP-addressable.
- Provide a feature to enable or disable, at the user's discretion, "fuzzy-logic" plate matching to enable the system to match common number character issues (o/0 and 8/B) or unknown characters.
- Captures a live, corresponding color overview image of the vehicle and simultaneously displaying the captured license plate, along with the date and time stamp of the image and a percentage confidence rated for each license plate. The confidence level is defined as the percentage of time that an interpretation of that confidence will be correct. For example, an interpretation with a confidence of 95 percent should be correct 95 percent of the time.
- Allows up to 12 GB of optional compact flash storage to allow for buffering of data.
- Provides a permanent record of all interpretations and captured images in a chronological order at a rate of up to 45 images per minute as determined by the operator. The operator can directly input whether the interpretation is correct while viewing the image. The system must keep a record of the operator inputs.
- Operator interface that allows reviewing and modifying license plate records associated with each vehicle record.
- Decode license plate numbers into a digital string and associate the captured image and license plate number into a single vehicle record file.
- Provide a still image capture of each CMV for identification purposes, include the original image of the license plate number in the field of view.
- Attaches unique identifying information to each license plate number image capture in order to ensure data integrity and proper vehicle image association with other VWSS data collected.
- Provides dynamic exposure control including automated recalibration process to optimize the license plate number decode performance.
- Provides an operator interface to include database remote query functionality.

C. Camera Housing

Furnish the camera housing to meet the following requirements:

- Fabricate from corrosion resistant aluminum, finished in a neutral color of weather resistant enamel or polyester powdercoat.
- Equipped with tempered glass front window.
- Equipped with sunshield.
- Equipped with surge suppressors on all ungrounded conductors.

- Include mounting hardware to match mounting bracket. Provide mounting hardware specifically for the vendor's ALPR.

D. ALPR Metal Pole With Folding Mast Arms

Mount the ALPRs to galvanized steel poles in accordance with the manufacturer's recommendations, conforming to Section 1404 of the Standard Specifications with the following modifications to the standard:

- Design the pole to support the ALPR specified herein.
- Furnish the pole with a minimum height of eighteen (18) feet above the roadway.
- Furnish power conductors sized to correspond to the load and the distance. Furnish cables recommended by the manufacturer. Furnish crimp-on type connectors.

11.3 CONSTRUCTION METHODS

Comply with the manufacturer's recommendations for installation, conforming to the Standard Specifications and the following requirements:

- Install cameras with a fixed focal point or target distance from the camera to the vehicle license plates from 32 feet to 54 feet.
- Furnish all cabling and camera connectors from the same manufacturer as the ALPR system.
- Fully operational without wire connectivity across roadways.

11.4 MEASUREMENT AND PAYMENT

ALPR System will be measured and paid as the actual number of automated license plate recognition systems furnished, installed, integrated, and accepted. No separate measurement will be made for the interface with the VWSS, database search engines, software, IR illuminators, poles, cabling, connectors, attachment assemblies, condulets, grounding equipment, surge protectors, or any other equipment required to install the ALPR system as these will be considered incidental to furnishing and installing the ALPR system. Metal poles will be paid for under Section 17.

Payment will be made under:

Pay Item	Pay Unit
ALPR System	Each

12. AUTOMATED USDOT NUMBER RECOGNITION (AUR) SYSTEM

12.1 DESCRIPTION

Furnish and install an automated USDOT number recognition (AUR) system with all necessary hardware, cabling, database search engines, and software in accordance with the Plans and Project Special Provisions. The AUR system must capture USDOT numbers displayed on the lateral surface of CMVs for each travel lane in the northbound direction of the VWSS.

Integrate the AUR into the Central Controller Software as described in Section 12.

The system must provide support coverage for the length of a CMV with a minimum aggregate horizontal field of view of 30' at the trigger point.

Furnish an AUR system that produces multiple USDOT number images per vehicle with varying flash, shutter and gain settings to ensure a high quality image regardless of weather or lighting conditions.

The system must provide effective USDOT number capture at night using IR illuminators and no other external lighting source.

Furnish AUR system that identifies and interprets USDOT numbers when displayed with other non-USDOT identifying information that may be displayed on the lateral side of a passing CMV including but not limited to carrier information, weight classifications and regional registration information.

Furnish an AUR system with a USDOT number read rate of 40% (all characters correctly read for 40% of readable USDOT numbers) at speeds up to 60 miles per hour. The system must provide, at a minimum, 80% of the required lateral surface area of passing CMVs to be considered adequate coverage for the purpose of capturing USDOT numbers and identification.

Provide a system with an operator interface to include database remote query functionality.

Provide at least one reference from an accredited law enforcement agency currently using the proposed AUR system in a non-static weigh station application.

12.2 MATERIAL

A. Camera

Furnish AUR cameras that comply with the following:

- Self-illuminating Infrared (IR) illuminators utilizing driver safe non-visible light (greater than 700nm) and only activated when images are being captured.
- IR light-emitting diodes (LEDs) utilized must be "pulsed" to enhance USDOT number capture.
- IR camera illumination certified to be "eye safe" by an independent testing agency.
- Enhanced low light resolution (1.2 million pixels).
- Shutter speed of 1/10,000 sec exposure setting.
- Vibration resistance: 10G (20Hz-200Hz).
- Integrate the camera and AUR processor into a single, sealed housing enclosure that is impervious to weather and environmental elements and tested to IP68 standards.
- Produces multiple USDOT number images per vehicle with varying flash, shutter and gain settings to ensure a high quality image regardless of weather or lighting conditions. Lens must capture up to 60 frames per second.
- Integrated AUR processor with hardware AES encryption to NIST FIPS 197 with optional hardware data encryption.

- Weighing no more than 15 lbs. and operating on less than 25W, 48V DC power with an external trigger mode and a "self trigger mode" to detect the presence of a CMV in the camera's field of view.
- Operates during typical rain and snow events.

B. AUR System Software

Integrate the AUR System Software into the VWSS Software. Furnish the AUR system software meeting the following requirements:

- Provide variants of the Optical Character Recognition (OCR) engine that are designed specifically for USDOT numbers. Provide OCR updates for new USDOT number designs as required.
- Utilizes internal camera controls to facilitate automated settings for optimum flash, gain and shutter configurations.
- Integrates into a wide variety of systems via relay output, RS232, TCP/IP Ethernet with socket and FTP protocols, as well as IP connectivity.
- Offer standard software JPEG compression, with optional hardware JPEG compression.
- Fully web-enabled and IP-addressable.
- Provide a feature to enable or disable, at the user's discretion, "fuzzy-logic" character matching to enable the system to match common number character issues (o/0 and 8/B) or unknown characters.
- Captures a live, corresponding color overview image of the vehicle and simultaneously displaying the captured USDOT number, along with the date and time stamp of the image and a percentage confidence rated for each USDOT number. The confidence level is defined as the percentage of time that an interpretation of that confidence will be correct. For example, an interpretation with a confidence of 95 percent should be correct 95 percent of the time.
- Allows up to 12 GB of optional compact flash storage to allow for buffering of data.
- Provides a permanent record of all interpretations and captured images in a chronological order at a rate of up to 45 images per minute as determined by the operator. The operator can directly input whether the interpretation is correct while viewing the image. The system must keep a record of the operator inputs.
- Operator interface that allows reviewing and modifying USDOT records associated with each vehicle record.
- Decode USDOT numbers into a digital string and associate the captured image and USDOT number into a single vehicle record file.
- Provide a still image capture of the side of each CMV for identification purposes, include the original image of the USDOT number in the field of view.

- Attaches unique identifying information to each USDOT number image capture in order to ensure data integrity and proper vehicle image association with other VWSS data collected.
- Provides dynamic exposure control including automated recalibration process to optimize the USDOT number decode performance.
- Provides an operator interface to include database remote query functionality.

C. Camera Housing

Furnish the camera housing to meet the following requirements:

- Fabricate from corrosion resistant aluminum, finished in a neutral color of weather resistant enamel or polyester powdercoat.
- Equipped with tempered glass front window.
- Equipped with sunshield.
- Equipped with surge suppressors on all ungrounded conductors.
- Include mounting hardware to match mounting bracket. Provide mounting hardware specifically for the vendor's AUR.

D. AUR Metal Pole Mounting

Mount the AURs to galvanized steel poles in accordance with the manufacturer's recommendations, conforming to Section 1404 of the Standard Specifications with the following modifications to the standard:

- Bracket arms and transformer bases are not required unless recommended by the manufacturer.
- Design the pole to support the AUR specified herein.
- Furnish the pole with a height as recommended by the manufacturer.
- Furnish power conductors sized to correspond to the load and the distance. Furnish cables recommended by the manufacturer. Furnish crimp-on type connectors.

12.3 CONSTRUCTION METHODS

Comply with the manufacturer's recommendations for installation, conforming to the Standard Specifications. Furnish all cabling and camera connectors from the same manufacturer as the AUR system.

Mount the AUR camera and the freeze-frame camera to the same galvanized metal pole.

12.4 MEASUREMENT AND PAYMENT

AUR System will be measured and paid as the actual number of automated USDOT number recognition systems furnished, installed, integrated, and accepted. No separate measurement will be made for interface with the VWSS, database search engines, software, IR illuminators, poles, cabling, connectors, attachment assemblies, condulets, grounding equipment, surge protectors, or any other equipment required to install the AUR system as these will be considered incidental to furnishing and installing the AUR system. Metal poles will be paid for under the Section 15.

Payment will be made under:

Pay Item	**Pay Unit**
AUR System	Each

13. CENTRAL CONTROLLER SOFTWARE

13.1 DESCRIPTION

A. General

Furnish and install VWSS Central Controller Software in a controller housed in the roadside equipment cabinet in accordance with the Plans and Project Special Provisions. Provide VWSS Central Controller Software that is compatible with Microsoft Windows XP and Windows 7.

Furnish and install an integrated software package that provides the functionality described in these Project Special Provisions. The system will operate automatically and continuously, without the need for human intervention, collecting data, making that data available electronically to the users, and remotely monitoring the system. Allow for up to 6 simultaneous remotely connected enforcement personnel to monitor and interact with the installed VWSS IP connectivity (furnished by others).

Information Security and accountability must meet Federal and State Information Security Directives, Laws, and Policies. Security Architecture must be approved by NCSHP and the NC Department of Justice Information Security office prior to installation.

Furnish and install a VWSS Central Controller Software that distinguishes potential weigh violators from the real-time traffic stream based on automatic weight measurements that exceed the established thresholds.

Furnish and install software that distinguishes high safety risk motor carriers and vehicles from the real-time traffic stream based on an automatic screening algorithm that indicates the presence of safety risks, credentials, or other criteria described in these Project Special Provisions.

Contractor must specify and document bandwidth needs. System must operate using bandwidth no greater than a single T1 Frame Relay circuit (1.5 megabits per second).

B. Screening Criteria

1. Operation Overview

The VWSS software must interface and be compatible with the existing data structure that the NCSHP currently uses for commercial vehicle data screening. The system must be upgradeable to the newest version of SAFER, as the SAFER upgrades its versions.

Integrate the new VWSS, including the ALPR and AUR systems, with the existing CVIEW, SAFER, FuelTaCS, PRISM and NCIC programs currently in use by the NCSHP for commercial vehicle data screening and enforcement.

Provide VWSS software with the following major features:

- Snapshot screening database containing a local copy of NCIC, FuelTaCS, PRISM, CVIEW and SAFER data.
- Credential processing and screening software algorithms that include automated screening with PRISM status of the carrier and vehicle to determine if a Federal out-of-service order has been issued against the carrier or if the vehicle has been targeted; automated screening to retrieve the carrier safety information from the screening database, automated screening to check the FuelTaCS database of carriers who have delinquent fines; and automated screening to check the NCIC database of vehicles which have been reported stolen.
- Automatically alert system users through audible and visual alarms of real-time CMV violators passing the VWSS through user defined thresholds and the screening databases described herein.
- Windows-based graphical user interface (GUI) for accessing the snapshots and credential screening components. Furnish a user friendly system with one GUI for accessing each screening component.

The specific major functions fulfilled by the baseline VWSS software are:

- Record all vehicle characteristics in a database.
- Produce reports of recorded vehicle characteristics.
- Screen vehicles for credential violations.
- Screen vehicles for safety violations.
- Screen vehicles using operator defined hot lists.
- Allow duly authorized operators to adjust screening criteria.
- Allow the operator to view vehicle screening results along with the details about the carrier, from the screening database.
- ALPR and AUR systems.

The software must maintain a configurable number of months, minimum of 3 months, maximum of 12 months, of historical vehicle data for analysis and reporting. Purge this data from the system on a weekly basis (i.e., once per week the software will examine all of the vehicle records to determine which are older than the specified expiry period and delete them from the database). Furnish software allowing purging to be configurable by day of week and time of day by a system administrator. Confirm purging schedule with the Engineer.

2. VWSS Characteristics

a. Roadside Operations Requirements

Provide the VWSS with the following functions:

- Vehicle screening.
- Vehicle display.
- Vehicle reporting.

- CVIEW interface.

The VWSS must have the ability to keep the screening database up-to-date by regularly downloading the appropriate data (CVIEW, SAFER, FuelTaCS, NCIC, PRISM, etc.) from the associated system over a secured connection.

The VWSS must produce printed reports detailing vehicle activity at the VWSS.

The VWSS must maintain a vehicle record for each commercial vehicle passing the system.

Furnish the VWSS vehicle record to contain the following information about each commercial vehicle:

- ALPR Data
- AUR Data
- Time and date stamp
- Lane
- Axle counts
- Vehicle classification
- Overall vehicle weight
- Maximum gross vehicle weight
- Vehicle length
- Vehicle speed
- Axle record type
- ESAL value
- Screening decision
- Carrier ID (USDOT number) from CVIEW data
- Axle weights, and
- Axle spacing
- Error Code

Interface the VWSS to the CVIEW system and the FuelTaCS system for receiving commercial vehicle data over a secured connection, as described below.

b. Screening Requirements

Automatically screen the PRISM status of the CMV carrier and vehicle to determine if a Federal out-of-service order has been issued against the carrier or if the vehicle has been targeted.

Automatically screen and retrieve the carrier safety information from the screening database.

Automatically screen against North Carolina's FuelTaCS database of carriers who have delinquent fines.

Automatically screen the NCIC database of vehicles which have been reported stolen.

Uniquely display each vehicle record including all associated roadside sensor data.

Maintain an operator-defined hot list of carriers regardless of their weight or safety credential status.

Include a carrier hot list with an active date range for each entry defining the period in which the entry is valid.

Include the following information on the carrier hot list:

- Carrier ID.
- License Plate data.

- USDOT numbers.
- Comments – the user can enter what action to take or any other information that would be useful.
- Start date – when the hot list status starts.
- End date – when the hot list status ends.

Maintain an operator-defined hot list of vehicles regardless of their weight or safety credential status.

Include on the vehicle hot list an active date range for each entry defining the period in which the entry is valid.

Include the following information on the vehicle hot list:

- Vehicle ID (including the VIN, license plate number and USDOT number)
- Comments – the user can enter what action to take when the vehicle reports or any other information that would be useful.
- Start date – when the hot list status starts.
- End date – when the hot list status ends.
- Jurisdiction – identifies registering jurisdiction.

Program the VWSS to maintain a local database of carrier snapshot data received from CVIEW, PRISM, and the FuelTaCS systems.

Program the VWSS to maintain a local database of vehicle snapshot data received from CVIEW.

Program the VWSS to permit the operator to override each specific credential/safety screening check on a carrier by carrier basis. Any credential or safety item that is overridden is not checked as part of the screening process for the designated carrier.

Program the VWSS to permit the operator to override each specific credential/safety screening check on a vehicle by vehicle basis. Any credential or safety item that is overridden is not checked as part of the screening process for the designated vehicle.

c. Display Requirements

Program the VWSS to provide a Screening Results Display snapshot screen that permits the operator to do the following:

- View the ALPR system data.
- View the AUR system data.
- View the credentials and safety scores that were used in screening a particular vehicle.
- Display which credentials and safety scores failed.
- Display which credentials and safety scores a vehicle is currently failing (if the operator requested updated snapshot data from CVIEW, the screening results may no longer be accurate).

- Search all system components by date, time and vehicle record and allow user-defined alarm notifications to be configured to meet multiple threshold levels.
- Specify which credentials and safety items to use to screen vehicles.
- Enable or disable each individual screening criteria.
- Enter a minimum/maximum allowable value to be used for each safety item while screening vehicles.
- Save a default configuration of screening criteria to be recalled at some point in the future.
- Quickly and easily return all credential and safety score screening criteria to their default values.
- Permit the operator to retrieve current vehicle and carrier snapshot data from the screening database, and store it in the local screening results database.
- View snapshot data retrieved from CVIEW for any requested vehicle or carrier.
- Restrict access to system functions with a user identification and password scheme. The adjustment of screening criteria in particular must be restricted to only personnel with the required privileges.
- Produce reports on vehicle data.
- Permit the operator to view all historical, vehicle data for any vehicle that has passed the VWSS in the last three months.
- Edit each of the hot lists.

d. Reporting Requirements

Program the VWSS to produce the following reports:

- CLASS BY HOUR: showing the count of vehicles in each class for each hour of the day
- CLASS BY DAY: showing the count of vehicles in each class for each day of the week
- SPEED BY CLASS: showing the count of vehicles in each speed range for each class of vehicle
- SPEED BY HOUR: showing the count of vehicles in each speed range for each hour of the day
- FRONT AXLES: showing the count of all front axles recorded within different weight ranges for each vehicle class
- SINGLE AXLES: showing the count of all single axles recorded within different weight ranges for each vehicle class
- TANDEM AXLES: showing the count of all tandem axles recorded within different weight ranges for each vehicle class
- TRIDEM AXLES: showing the count of all tridem axles recorded within different weight ranges for each vehicle class
- QUADREM AXLES: showing the count of all quadrem axles recorded within different weight ranges for each vehicle class

- GROSS VEHICLE WEIGHT: showing the count of vehicles in each Gross Vehicle Weight range for each vehicle class. Display the total GVW in a separate column
- ERRORS: showing the hourly count of vehicle display errors reported by the system
- TOTAL ESAL: showing the hourly summary of Equivalent Single Axle Loads for each vehicle class
- LANE COUNT: showing the count of vehicles in each class for each lane at the weigh station
- WEIGHT VIOLATION BY CLASS: showing for each vehicle class, the total vehicle count, the number of valid vehicles, the number of warning vehicles, the number of violating vehicles, what percentage of the total was violating, the number of single axle violations, and the number of tandem axle violations
- WEIGHT VIOLATION BY HOUR: showing for each hour of the day, the total vehicle count, the number of valid vehicles, the number of warning vehicles, the number of violating vehicles, what percentage of total was violating, the number of single axle violations, the number of tandem axle violations and the number of GVW violations
- WEIGHT VIOLATION COUNT: showing for each hour of the day and each vehicle's class, the total vehicle count, the number of valid vehicles, the number of warning vehicles, the number of violating vehicles, what percentage of total were violating, the number of single axle violations, the number of tandem axle violations and the number of GVW violations

Program the VWSS to produce specific reports that are based on data stored in the VWSS:

- ALPR system data
- AUR system data
- Number of vehicles traveling down each lane
- List of a carrier's vehicles passing the VWSS during a specific time period, include when the vehicle passes the VWSS

e. Credential Enforcement Screening Requirements

The VWSS must screen data from the CVIEW, SAFER, FuelTaCS, PRISM, and/or the NCIC systems currently in use by the NCSHP for credentials, safety and oversize/overweight enforcements listed below using the field data collected at the VWSS site. Ensure that the screening tool allows an operator to enable and disable the screening tools in the setup screen and the vehicle display screen.

At a minimum, include the following Credential Enforcement Screening Requirements:

- Intra-State Credentials
- SSRS Credentials
- Exempt Credentials
- HazMat Credentials
- IRP Credentials
- IFTA Credentials

- Safety Enforcement
- Oversize/Overweight Enforcement

3. External Interface Requirements

Provide a secure connection to allow the NCDOT to send carrier and vehicle snapshot data in XML format from the State CVIEW system to the VWSS.

Program the VWSS to continue normal operation while receiving and processing files from the state CVIEW system and to support the processing of data at a rate to be determined, but which may be as often as an update every 15 minutes.

Provide a secure connection to allow the NCDOT to send data in XML format from the PRISM and FuelTaCS systems to the VWSS.

C. Operator Interface and System Controls

Ensure the system allows operators to view and control system operations through an IP connection on their laptops or desktop computers. Using laptops or desktop computers, users will view vehicle data collected by each of the detectors and sensors in the system, the ALPR and AUR systems, view and print reports, identify and respond to system alarms, and view freeze-frame images of violating vehicles. At a minimum, the user display screens will allow the users to view the following information:

a. ALPR Data

Vehicle records for each lane in the VWSS. Program the system to show data and images collected.

b. AUR Data

Vehicle records for each lane in the VWSS. Program the system to show data and images collected.

c. Vehicle Data

Vehicle records for each lane in the VWSS. Program the system to show data collected by the in-road detectors and PQS.

d. Individual Vehicle Data

Program the system to display all information on a specific vehicle collected by the VWSS. Program the system to allow operators to view snapshot photographs taken of vehicles via the freeze-frame CCTV camera, the ALPR and AUR systems.

e. Alarms

Program the system to allow operators to review alarms reported by the VWSS and to allow operators to view snapshot photographs taken by the freeze-frame CCTV camera, the ALPR and AUR systems of violating vehicles.

f. Summary Data

Program the system to allow operators to review summary data for both VWSS lanes. Have the summary data include total vehicle counts, vehicle classifications, vehicle speeds, gross

vehicle weights (by category), axle weights and system violations (by type including weight, length, over-height and credentials).

D. System Reports

The software must provide the following reports:

- Targeted as Federal out-of-service
- Carrier safety information
- Delinquent fines
- Reported as stolen
- Violations
- Classification (by hour, by day of the month and by day of the week)
- Vehicle speed (by class and by hour)
- ESALs (Equivalent Single Axle Loads) by Hour
- Weight violations (by hour and by class)
- Weight violations count
- Truck count (by day of the month and by day of the week)
- Truck count by gross vehicle weight
- Vehicle speeds (by class and by hour)
- System errors (errors reported by system diagnostics
- Vehicle heights (by class and by hour)
- Vehicle lengths
- ALPR records
- AUR records

E. Database Queries

The software must provide an operator the ability to perform data queries on any database item and combination of database items. Furnish the ability to view the results of database queries on the user's screen and to optionally print the database queries in a format acceptable to the Department.

13.2 MATERIAL

Provide reproducible copies of all software on CD-ROM. Furnish all software pre-installed on controller hardware prior to installation. Provide source code for the portions of the software that must be changed in order to change the screening criteria.

Controller hardware used to run the software described in this Project Special Provision is accounted for in other specifications in this document.

Provide mockups for all operator screens and system reports prior to generating/developing the screens and reports. Make changes to the report formats and screen views based on the Department's comments.

13.3 MEASUREMENT AND PAYMENT

Central Controller Software will be paid for at the contract lump sum price for central controller software. No measurement will be made for the interface with the individual components of the system, including but not limited to the over-height detection, and WIM systems as these will be considered incidental to furnishing and installing the Central Controller Software. No measurement will be made for integrating the ALPR and the AUR systems as these will be measured and paid for under Sections 10 and 11. No measurement will be made for any on-going fees associated with outside party website hosting as these will be considered incidental to furnishing and installing the Central Controller Software. No measurement will be made for software updates required during the 3 year System Warranty as these will be considered incidental to furnishing the System Warranty as described in Section 23.

Payment will be made under:

Pay Item	**Pay Unit**
Central Controller Software	Lump Sum

14. TYPE 170E BASE MOUNTED EQUIPMENT CABINET

14.1 DESCRIPTION

Furnish and install Type 170E base mounted equipment cabinets and all necessary hardware. Conform to CALTRANS *Traffic Signal Control Equipment Specifications* except as required herein. Furnish CALTRANS Model 332 base mounted equipment cabinet.

Furnish all foundation mounting hardware, detector sensor cards, one Corbin Number 2 cabinet key, surge protection, grounding systems, and all necessary hardware.

14.2 MATERIAL

Material, equipment, and hardware furnished under this section shall be pre-approved on the Department's QPL.

Provide a moisture resistant coating on all circuit boards.

Provide a power line surge protector that is a two-stage device that will allow connection of the radio frequency interference filter between the stages of the device. Ensure that a maximum continuous current is at least 10A at 120V. Ensure that the device can withstand a minimum of 20 peak surge current occurrences at 20,000A for an 8x20 microsecond waveform. Provide a maximum clamp voltage of 280V at 20,000A with a nominal series inductance of 200µh. Ensure that the voltage does not exceed 280V. Provide devices that comply with the following:

Frequency (Hz)	Minimum Insertion Loss (dB)
60	0
10,000	30
50,000	55
100,000	50
500,000	50
2,000,000	60
5,000,000	40
10,000,000	20
20,000,000	25

A. Type 170 E Cabinet Electrical Requirements

Provide a cabinet assembly that ensures that upon leaving any cabinet switch, the controller starts up in the programmed start up phases and start up interval.

Furnish two sets of non-fading cabinet wiring diagrams and schematics in a paper envelope or container and placed in the cabinet drawer.

Provide surge suppression in the cabinet for each type of cabinet device. Provide surge protection for the full capacity of the cabinet.

All AC+ power is subject to radio frequency signal suppression.

Install a UL listed, industrial, heavy-duty type power outlet strip with a maximum rating of 15 A / 125 VAC, 60 Hz. Provide a strip that has a minimum of 3 grounded outlets. Ensure the power outlet strip is mounted securely; provide strain relief if necessary.

Provide a terminal mounted loop surge suppresser device for each set of loop terminals in the cabinet. For a 10x700 microsecond waveform, ensure that the device can withstand a minimum of 25 peak surge current occurrences at 100A, in both differential and common modes. Ensure that the maximum breakover voltage is 170V and the maximum on-state clamping voltage is 30V. Provide a maximum response time less than 5 nanoseconds. Ensure that off-state leakage current is less than 10 µA. Provide a nominal capacitance less than 220pf for both differential and common modes.

Provide surge suppression on each communications line entering or leaving a cabinet. Ensure that the communications surge suppresser can withstand at least 80 occurrences of an 8x20 microsecond wave form at 2000A and a 10x700 microsecond waveform at 400A. Ensure that the maximum clamping voltage is suited to the protected equipment. Provide a maximum response time less than 1 nanosecond. Provide a nominal capacitance less than 1500pf and a series resistance less than 15 Ω.

Provide conductors for surge protection wiring that are of sufficient size (ampacity) to withstand maximum overcurrents which could occur before protective device thresholds are attained and current flow is interrupted.

Furnish a fluorescent fixture in the rear across the top of the cabinet and another fluorescent fixture in the front across the top of the cabinet at a minimum. Ensure that the fixtures provide sufficient light to illuminate all terminals, labels, switches, and devices in the cabinet. Conveniently locate the fixtures so as not to interfere with a technician's ability to perform work on any devices or terminals in the cabinet. Provide a protective diffuser to cover exposed bulbs. Furnish all bulbs with the cabinet. Provide door switch actuation for the fixtures.

Furnish a quad power outlet (four 15 amp sockets) for use by network equipment.

Furnish power allocations for network equipment. Total power made available to network and telephone company equipment not to exceed 20 amps at 115VAC.

B. Type 170 E Cabinet Physical Requirements

Provide a surge protection panel with loop protection devices that allows sufficient free space for wire connection/disconnection and surge protection device replacement.

Provide permanent labels that indicate the slot and the pins connected to each terminal. Label and orient terminals so that each pair of inputs is next to each other. Ensure that a Number 4 AWG green wire connects the surge protection panel assembly ground bus to the main cabinet equipment ground.

Provide a minimum 14 x 16 inch pull out, hinged top shelf located immediately below controller mounting section of the cabinet. The shelf must extend fully to allow the table surface to retract outside the cabinet approximately even with the bottom of the controller. Ensure the shelf has a storage bin interior which is a minimum of 1 inch deep and approximately the same dimensions as the shelf. Provide an access to the storage area by lifting the hinged top of the shelf. Fabricate the shelf and slide from aluminum or stainless steel and ensure the assembly can support the controller plus 15 pounds of additional weight. Ensure shelf has a locking mechanism to secure it in the fully extended position and does not inhibit the removal of the controller when fully extended. Provide a locking mechanism that is easily released when the shelf is to be returned to its non-use position directly under the controller.

14.3 CONSTRUCTION METHODS

Install base mounted equipment cabinets and all necessary hardware as required to provide a fully operational VWSS.

Ensure space in equipment cabinets allows for network equipment.

14.4 MEASUREMENT AND PAYMENT

Base mounted equipment cabinet will be measured and paid as the actual number of base mounted equipment cabinets furnished, installed, and accepted.

No measurement will be made for cabling, connectors, cabinet attachment assemblies, conduit, condulets, grounding equipment, surge protectors, or any other equipment or labor required to install the equipment cabinet and integrate it with the VWSS equipment as these will be considered incidental to furnishing and installing the base mounted equipment cabinet.

Payment will be made under:

Pay Item	**Pay Unit**
Base Mounted Equipment Cabinet	Each

15. CABINET BASE EXTENDER

15.1 DESCRIPTION

Furnish and install a cabinet base extender with all necessary hardware.

15.2 MATERIAL

Fabricate base extender from the same materials and with the same finish as cabinet housing. Fabricate base extender in the same manner as controller cabinets, meeting all applicable specifications called for in Section 7.5 of CALTRANS TEES (11/19/99). Provide base extenders that are a minimum height of 12 inches.

15.3 CONSTRUCTION METHODS

Install a base extender between the base mounted equipment cabinet and the cabinet foundation. Use permanent, flexible waterproof sealing material to seal between the cabinet base and cabinet base extender and to seal the space between cabinet base extender and the foundation.

15.4 MEASUREMENT AND PAYMENT

Cabinet base extender will be measured and paid as the actual number of cabinet base extenders furnished, installed, and accepted.

Payment will be made under:

Pay Item	**Pay Unit**
Cabinet Base Extender	Each

16. CABINET FOUNDATION

16.1 DESCRIPTION

Furnish and install a foundation and all necessary hardware.

Furnish either poured concrete foundations or preformed cabinet pad foundation and all necessary hardware. Obtain approval of foundation type.

16.2 MATERIAL

Preformed cabinet pad foundation material, equipment, and hardware furnished under this section shall be pre-approved on the Department's QPL.

Refer to Article 1000-4, Portland Cement Concrete, of the *Standard Specifications*.

Provide foundations with a minimum pad area that extends 24" from front and back of cabinet and 3" from sides of cabinet.

Furnish a cabinet foundation with chamfered top edges. Provide minimum Class B concrete.

Provide a preformed cabinet pad foundation with 7"(l) x 18"(w) minimum opening for the entrance of conduits. Ensure that no more than four 3/4" holes are cast or drilled in each pad.

16.3 CONSTRUCTION METHODS

Comply with Section 825, Incidental Concrete Construction – General, of the *Standard Specifications*.

Obtain approval for final cabinet foundation location before pouring concrete base.

Do not install foundations over uncompacted fill or muck. Use procedures, equipment, and hardware as follows:

- Hand tamp soil before placing concrete. Maintain 12 inches minimum from service pole to closest point on foundation unless otherwise approved.
- Use a minimum of four 1/2-inch diameter expanding type anchor bolts to secure cabinet to foundation. Install minimum 4 inches above and 4 inches below finished grade. Locate external stubbed out conduit at cabinet foundation so conduit is in middle of cabinet. Provide service conduit as the rightmost conduit coming into cabinet. Provide two spare conduits stubbed out; one pointed toward service pole and the other toward direction of lead-in cable. Inscribe identification arrow in foundation indicating direction of spare conduits.
- Give cabinet foundation a broom finish. Seal space between cabinet base and foundation with permanent, flexible, waterproof sealing material.
- If using preformed cabinet pad, ensure ground is level before installation. Use loop sealant to seal the conduit stub-outs within the knock-out.

16.4 MEASUREMENT AND PAYMENT

Cabinet foundation will be measured and paid as the actual number furnished, installed, and accepted.

Payment will be made under:

Pay Item	**Pay Unit**
Cabinet Foundation	Each

17. FREEZE FRAME CAMERA AND AUR METAL POLE

17.1 DESCRIPTION

Furnish and install metal poles and all necessary hardware in accordance with the Plans and Project Special Provisions.

17.2 MATERIAL

A. General

Furnish metal poles, grounding systems, and all necessary hardware.

Furnish metal poles and support systems that contain no guy assemblies, struts, rods, stay braces, clamps or U-bolts, except where noted. Provide metal poles and support systems with hardware that equals or exceeds AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals (AASHTO Specifications) in effect on the date of advertisement (assume ice and average winds for a 50-Year Mean Recurrence Interval with a 1.3 gust factor when

loaded). Provide assemblies with a round or near-round cross-sectional design consisting of no less than six sides. The sides may be straight, convex, or concave.

It is the Contractor's responsibility to determine the required height of the metal poles. Prior to furnishing metal poles, use manufacturer's specifications for equipment and field measurements and adjusted cross-sections to determine if pole heights are sufficient for equipment functionality and State required clearances.

Ensure metal poles permit cables to be installed inside poles. For holes in the poles and arms used to accommodate cables, provide full-circumference grommets.

After fabrication, have steel poles and all parts used in the assembly (except the standard length galvanizing on the anchor bolts) hot-dip galvanized. Provide hot-dip galvanizing on structures that meets or exceeds ASTM Standard A-123. Provide galvanizing on hardware that meets or exceeds ASTM Standard A-153. Ensure threaded material is brushed and retapped as necessary after galvanizing. Perform repair of damaged galvanizing that complies with the following:

Repair of Galvanizing ..... Article 1076-6

B. Metal Poles

Have shafts of the tapered tubular type and fabricated of steel conforming to ASTM A-595 Grade A or an approved equivalent. Have galvanization in accordance with ASTM A-123.

Have shafts that are continuously welded for the entire length by the submerged arc process, and with exposed welds ground or rolled smooth and flush with the base metal. Provide welding that conforms to Article 1072-20 except that no field welding on any part of the pole will be permitted.

Have anchor bases for steel poles fabricated from plate steel meeting the requirements of ASTM A 36M or cast steel meeting the requirements of ASTM A 27M Grade 485-250 or an approved equivalent.

Have poles permanently stamped above the hand holes with the manufacturer's name or logo.

Provide tapers for all shafts that begin at base and that have diameters which decrease uniformly at the rate of not more than 0.14 inch per foot of length.

Ensure allowable pole deflection does not exceed that allowed by AASHTO Specifications.

Provide anchor bolts with two anchor nuts and two washers for each pole. Have anchor bolts fabricated from steel with minimum yield strength of 55,000 psi and minimum ultimate tensile strength of 70,000 psi. Ensure anchor bolts have required diameters, lengths, and positions, and will develop strengths comparable to their respective poles. Provide anchor bolts with a 6 x 6 x 3/4 inch plate at the embedded end secured with a washer and nut.

For each pole, provide a 1/2 inch minimum thread diameter, coarse thread stud and nut for grounding which will accommodate Number 6 AWG ground wire. Ensure lug is electrically bonded to the pole and is conveniently located inside the pole at the hand hole.

Provide a removable pole cap with stainless steel attachment screws for the top of each pole. Ensure the cap is cast aluminum conforming to Aluminum Association Alloy 356.0F. Furnish cap attached to the pole with a sturdy chain or cable approved by the Department. Ensure chain or cable is long enough to permit the cap to hang clear of the pole-top opening when the cap is removed.

17.3 CONSTRUCTION METHODS

Furnish shop drawings and loading diagrams for approval. Provide triplicate copies of detailed shop drawings for each type of structure. Ensure shop drawings show material specifications for each component and identifies welds by type and size. Do not furnish structures until approval is received.

Install metal poles, hardware, and fittings as shown on the manufacturer's installation drawings. Install metal poles so that when the pole is fully loaded it is within 2 degrees of vertical. Install poles with the manufacturer's recommended "rake." Use threaded leveling nuts to establish rake. Do not use shims or other types of leveling devices.

Do not cut or split grommets.

17.4 MEASUREMENT AND PAYMENT

Freeze Frame Camera and AUR metal pole will be measured and paid as the actual number of freeze frame and AUR metal poles furnished, installed, and accepted.

Payment will be made under:

Pay Item	**Pay Unit**
Freeze Frame Camera and AUR Metal Pole	Each

18. METAL POLES WITH FOLDING MAST ARMS

18.1 DESCRIPTION

Furnish and install metal poles with folding mast arms for mounting the ALPRs and all necessary hardware in accordance with the Plans and Project Special Provisions.

Construct the metal poles with a hinge plate assembly. The hinge assembly shall allow maintenance crews to fold the mast arm for servicing of equipment attached to the mast arm, from the shoulder. A metal pole with folding mast arm of this type can be purchased from:

Union Metal Corporation
1432 Maple Ave., NE
PO Box 9920
Canton, OH 44705
(330) 456-7653

Atlantic Technical Sales
14522 – K Lee Road
Chantilly, VA 20151-1639
Tel: 703-631-6661

18.2 MATERIALS

A. General

Furnish metal poles with folding mast arms, grounding systems, and all necessary hardware. Provide steel arms as indicated on the Plans.

Furnish metal poles and support systems that contain no guy assemblies, struts, rods, stay braces, clamps or U-bolts, except where noted. Provide metal poles and support systems with hardware that equals or exceeds AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals (AASHTO Specifications) in effect on the date of advertisement

(assume ice and average winds for a 50-Year Mean Recurrence Interval with a 1.3 gust factor when loaded). Provide assemblies with a round or near-round cross-sectional design consisting of no less than six sides. The sides may be straight, convex, or concave.

It is the Contractor's responsibility to determine the required height of the metal poles and the length of the folding mast arm. Prior to furnishing metal poles, use manufacturer's specifications for equipment and field measurements and adjusted cross-sections to determine if pole heights and mast arm lengths are sufficient for equipment functionality and State required clearances.

Ensure metal poles permit cables to be installed inside poles and mast arms. For holes in the poles and arms used to accommodate cables, provide full-circumference grommets.

After fabrication, have steel poles, required mast arms, and all parts used in the assembly (except the standard length galvanizing on the anchor bolts) hot-dip galvanized. Provide hot-dip galvanizing on structures that meets or exceeds ASTM Standard A-123. Provide galvanizing on hardware that meets or exceeds ASTM Standard A-153. Ensure threaded material is brushed and retapped as necessary after galvanizing. Perform repair of damaged galvanizing that complies with the following:

Repair of Galvanizing ..... Article 1076-6

B. Metal Poles

Have shafts of the tapered tubular type and fabricated of steel conforming to ASTM A-595 Grade A or an approved equivalent. Have galvanization in accordance with ASTM A-123.

Have shafts that are continuously welded for the entire length by the submerged arc process, and with exposed welds ground or rolled smooth and flush with the base metal. Provide welding that conforms to Article 1072-20 except that no field welding on any part of the pole will be permitted.

Have anchor bases for steel poles fabricated from plate steel meeting the requirements of ASTM A 36M or cast steel meeting the requirements of ASTM A 27M Grade 485-250 or an approved equivalent.

Have poles permanently stamped above the hand holes with the manufacturer's name or logo.

Provide tapers for all shafts that begin at base and that have diameters which decrease uniformly at the rate of not more than 0.14 inch per foot of length.

Ensure allowable pole deflection does not exceed that allowed by AASHTO Specifications. For mast arm poles (with primarily moment loads), ensure maximum angular rotation of the top of the pole does not exceed 1° 40'.

Provide anchor bolts with two anchor nuts and two washers for each pole. Have anchor bolts fabricated from steel with minimum yield strength of 55,000 psi and minimum ultimate tensile strength of 70,000 psi. Ensure anchor bolts have required diameters, lengths, and positions, and will develop strengths comparable to their respective poles. Provide anchor bolts with a 6 x 6 x 3/4 inch plate at the embedded end secured with a washer and nut.

For each pole, provide a 1/2 inch minimum thread diameter, coarse thread stud and nut for grounding which will accommodate Number 6 AWG ground wire. Ensure lug is electrically bonded to the pole and is conveniently located inside the pole at the hand hole.

Provide a removable pole cap with stainless steel attachment screws for the top of each pole. Ensure the cap is cast aluminum conforming to Aluminum Association Alloy 356.0F. Furnish cap attached to the pole with a sturdy chain or cable approved by the Department. Ensure chain or cable is long enough to permit the cap to hang clear of the pole-top opening when the cap is removed.

C. Mast Arms

Provide hinged mast arm assemblies.

Provide pole plates and associated gussets and fittings for attachment of required mast arms. As part of each mast arm attachment, provide a cable passage hole in the pole to allow passage of equipment cables from the pole to the arm.

Ensure allowable mast arm deflection does not exceed that allowed by AASHTO Specifications.

Furnish all arm plates and necessary attachment hardware, including bolts and brackets.

Provide 50 percent spare bolts for each arm.

Provide grommeted holes on the arms to accommodate cables for the equipment.

Provide arms with weatherproof connections for attaching to the shaft of the pole.

Provide hardware that is galvanized steel or stainless steel.

Provide a removable end cap with stainless steel attachment screws for the end of each mast arm. Furnish cap attached to the arm with a sturdy chain or cable approved by the Department. Ensure chain or cable is long enough to permit the cap to hang clear of the arm end opening when the cap is removed.

Comply with the following for Steel Arms:

- Have standard weight black steel pipe conforming to ASTM A 53-90a, Type E or Type S, Grade B or an approved equivalent.
- For the arms, conform to the welding requirements of the steel poles.
- Hot-dip galvanize inside and outside, after all fabricating, cutting, punching, and welding is completed.

18.3 CONSTRUCTION METHODS

Furnish shop drawings and loading diagrams for approval. Provide triplicate copies of detailed shop drawings for each type of structure. Ensure shop drawings show materials specifications for each component and identifies welds by type and size. Do not furnish structures until approval is received.

Install metal poles with folding mast arms, hardware, and fittings as shown on the manufacturer's installation drawings. Install metal poles so that when the pole is fully loaded it is within 2 degrees of vertical. If horizontal-type arms are furnished, install arms within 2 degrees of horizontal when loaded with hardware as identified on the Plans. Install poles with the manufacturer's recommended "rake." Use threaded leveling nuts to establish rake. Do not use shims or other types of leveling devices.

Bond pole arms to grounding electrodes.

For holes in the arms used to accommodate cables, install grommets prior to wiring of pole or arm. Do not cut or split grommets.

18.4 MEASUREMENT AND PAYMENT

Metal poles with folding mast arm will be measured and paid as the actual number of metal poles with folding mast arms furnished, installed, and accepted.

Payment will be made under:

Pay Item	Pay Unit
Metal Pole with Folding Mast Arm	Each

19. METAL POLE FOUNDATIONS

19.1 DESCRIPTION

Perform a soil test at each proposed metal pole location. Furnish and install foundations for NCDOT metal poles with all necessary hardware in accordance with the Plans and specifications.

Metal Pole Standards have been developed and implemented by NCDOT for use in North Carolina. Design the foundation to conform to the applicable provisions in the NCDOT Metal Pole Standards. Comply with the provisions of Section 1700 of the Standard Specifications.

19.2 SOIL TEST AND FOUNDATION DETERMINATION

A. General

Drilled piers are reinforced concrete sections, cast-in-place against in situ, undisturbed material. Drilled piers are of straight shaft type and vertical.

Some standard drilled piers for supporting poles with mast arms may require wing walls to resist torsional rotation. Based upon this provision and the results of the required soil test, a drilled pier length and wing wall requirement may be determined and constructed in accordance with the Plans.

For non-standard site-specific poles, the contractor-selected pole fabricator will determine if the addition of wing walls is necessary for the supporting foundations.

B. Soil Test

Perform soil tests. Complete all required fill placement and excavation at each pole location to finished grade before drilling each boring. Drill one boring to a depth of 26 feet at each pole location.

Perform standard penetration tests (SPT) in accordance with ASTM D 1586 at depths of 1, 2.5, 5, 7.5, 10, 15, 20 and 26 feet. Discontinue the boring if one of the following occurs:

- A total of 100 blows have been applied in any 2 consecutive 6-in. intervals, or
- A total of 50 blows have been applied with < 3-in. penetration.

Describe each boring location by the station number and offset. For each boring, submit a legible (hand written or typed) boring log signed and sealed by a licensed geologist or professional

Department registered in North Carolina. Include on each boring the SPT blow counts and N-values at each depth, depth of the boring, and a general description of the soil types encountered.

C. Foundation Design

Use the following method for determining the Design N-value for each pole location:

$$N_{AVG} = \frac{(N@1' + N@2.5' + \ldots\ldots\ldots N@\text{Deepest Boring Depth})}{\text{Total Number of N-values}}$$

$$Y = (N@1')^2 + (N@2.5')^2 + \ldots\ldots\ldots (N@\text{Deepest Boring Depth})^2$$

$$Z = (N@1' + N@2.5' + \ldots\ldots\ldots N@\text{Deepest Boring Depth})$$

$$N_{STD\ DEV} = \left(\frac{(\text{Total Number of N-values} \times Y) - Z^2}{(\text{Total Number of N-values}) \times (\text{Total Number of N-values} - 1)} \right)^{0.5}$$

Design N-value equals lesser of the following two conditions:

$$N_{AVG} - (N_{STD\ DEV} \times 0.45)$$

Or

$$\text{Average of First Four N-Values} = \frac{(N@1' + N@2.5' + N@5' + N@7.5')}{4}$$

Note: If less than 4 N-values are obtained because of criteria listed in Section (B) above, use average of N-values collected for second condition. Do not include the N-value at the deepest boring depth for above calculations if the boring is discontinued at or before the required boring depth because of criteria listed in Section (B) above. Use N-value of zero for weight of hammer or weight of rod. If N-value is greater than 50, reduce N-value to 50 for calculations.

Determine a drilled pier length, "L," for each pole from the Foundation Selection Table based on the Design N-value and the predominant soil type. Submit a completed "Metal Pole Standard Foundation Selection Form" signed by the contractor's representative for each pole location. Include the design N-value calculation only. These forms are to be used by the contractor-selected pole fabricator to assist in the pole and foundation design.

The "Metal Pole Standard Foundation Selection Form" may be found as follows:

1) Go to www.NCDOT.org/business/.
2) Click on "Geotechnical Engineering Unit Forms."
3) Click on "Metal Pole Standard Foundation Selection Form."

If assistance is needed with the required calculations, contact the Signals & ITS Structures Engineer at (919) 661-4830. However, in no case will the failure or inability to contact the Structures Engineer be cause for any claims or requests for additional compensation.

19.3 DRILLED PIER CONSTRUCTION

A. Excavation

Perform excavations for drilled piers to the required dimensions and lengths including all miscellaneous grading and excavation necessary to install the drilled pier. Depending on the subsurface conditions encountered, excavation in weathered rock or removal of boulders may be required.

Dispose of drilling spoils as directed and in accordance with Section 802 of the 2006 Standard Specifications for Roads and Structures. Drilling spoils consist of all material excavated including water removed from the excavation either by pumping or with augers.

Construct drilled piers within the tolerances specified herein. If tolerances are exceeded, provide additional construction as approved by the Department to bring the piers within the tolerances specified. Construct drilled piers such that the axis at the top of the piers is no more than 3 inches in any direction from the specified position. Build drilled piers within 1% of the plumb deviation for the total length of the piers. Construct the finished top of pier elevation between 5 inches above and 2 inches above the finished grade elevation. Form the top of the pier such that the concrete is smooth and level.

If unstable, caving or sloughing soils are anticipated or encountered, stabilize drilled pier excavations with temporary steel casing during drilling through concrete placement. For each excavation, provide one continuous piece of steel casing that is clean smooth non-corrugated watertight steel of ample strength to withstand handling and driving stresses and the pressures imposed by concrete, earth or backfill. Use temporary steel casings with an outside diameter equal to the specified size of the pier and a minimum wall thickness of 1/4 inches. Extract all temporary casings during concrete placement in accordance with this special provision unless the Contractor chooses to leave the casing in place in accordance with the requirements below.

Any steel casing left in place will be considered permanent casing and must be installed before excavating or drilling such that the permanent casing is against undisturbed soil. Permanent steel casings are only allowed for strain poles and prohibited for mast arm poles. No additional compensation will be paid for permanent casing. If the Contractor chooses to use permanent steel casing, include all costs for permanent casing in the cost of the contract unit price bid for the "Drilled Pier Foundation" pay item.

Construct all drilled piers such that the piers are cast against undisturbed soil. If a larger casing and drilled pier are required as a result of unstable or caving material during drilling, backfill the excavation prior to removing the casing to be replaced. No additional payment will be made for substituting a larger diameter drilled pier in order to construct a drilled pier cast against undisturbed soil.

Any temporary steel casing that becomes bound or fouled during pier construction and cannot be practically removed may constitute a defect in the drilled pier. Improve such defective piers to the satisfaction of the Department by removing the concrete and enlarging the drilled pier, providing a replacement pier or other approved means. All corrective measures including redesign as a result of defective piers will not be cause for any claims or requests for additional compensation.

B. Reinforcing Steel

Completely assemble a cage of reinforcing steel consisting of longitudinal and spiral bars and place cage in the drilled pier excavation as a unit immediately upon completion of drilling unless the excavation is entirely cased. If the drilled pier excavation is entirely cased down to the tip, immediate placement of the reinforcing steel and the concrete is not required.

Lift the cage so racking and cage distortion does not occur. Keep the cage plumb during concrete operations and casing extraction. Check the position of the cage before and after placing the concrete.

Securely cross-tie the vertical and spiral reinforcement at each intersection with double wire. Support or hold down the cage so that the vertical displacement during concrete placement and casing extraction does not exceed 2 inches.

Do not set the cage on the bottom of the drilled pier excavation. Place plastic bolsters under each vertical reinforcing bar that are tall enough to raise the rebar cage off the bottom of the drilled pier excavation a minimum of 3 inches.

In order to ensure a minimum of 3 inches of concrete cover and achieve concentric spacing of the cage within the pier, tie plastic spacer wheels at five points around the cage perimeter. Use spacer wheels that provide a minimum of 3 inches "blocking" from the outside face of the spiral bars to the outermost surface of the drilled pier. Tie spacer wheels that snap together with wire and allow them to rotate. Use spacer wheels that span at least two adjacent vertical bars. Start placing spacer wheels at the bottom of the cage and continue up along its length at maximum 10-foot intervals. Supply additional peripheral spacer wheels at closer intervals as necessary or as directed by the Department.

C. Concrete

Begin concrete placement immediately after inserting reinforcing steel into the drilled pier excavation.

1. Concrete Mix

Provide the mix design for drilled pier concrete for approval and, except as modified herein, meeting the requirements of Section 1000 of the Standard Specifications.

Designate the concrete as Drilled Pier Concrete with a minimum compressive strength of 4500 psi at 28 days. Make certain the cementitious material content complies with one of the following options:

- Provide a minimum cement content of 640 lbs/yd^3 and a maximum cement content of 800 lbs/yd^3; however, if the alkali content of the cement exceeds 0.4%, reduce the cement content by 20% and replace it with fly ash at the rate of 1.2 lb of fly ash per pound of cement removed, or
- If Type IP blended cement is used, use a minimum of 665 lbs/yd^3 Type IP blended cement and a maximum of 833 lbs/yd^3 Type IP blended cement in the mix.

Limit the water-cementitious material ratio to a maximum of 0.45. Do not air-entrain drilled pier concrete.

Produce a workable mix so that vibrating or prodding is not required to consolidate the concrete. When placing the concrete, make certain the slump is between 5 and 7 inches for dry placement of concrete or 7 and 9 inches for wet placement of concrete.

Use Type I or Type II cement or Type IP blended cement and either No. 67 or No. 78M coarse aggregate in the mix. Use an approved water-reducer, water-reducing retarder, high-range water-reducer or high-range water-reducing retarder to facilitate placement of the concrete if necessary. Do not use a stabilizing admixture as a retarder in Drilled Pier Concrete without approval of the Department. Use admixtures that satisfy AASHTO M194 and add admixtures at the concrete plant when the mixing water is introduced into the concrete. Redosing of admixtures is not permitted.

Place the concrete within 2 hours after introducing the mixing water. Ensure that the concrete temperature at the time of placement is 90° F or less.

2. Concrete Placement

Place concrete such that the drilled pier is a monolithic structure. Vibration is only permitted, if needed, in the top 10 feet of the drilled pier or as approved by the Department. Remove any contaminated concrete from the top of the drilled pier and wasted concrete from the area surrounding the drilled pier.

Do not dewater any drilled pier excavations unless the excavation is entirely cased down to tip. Do not remove the temporary casing until the level of concrete within the casing is in excess of 10 feet above the bottom of the casing being removed. Maintain the concrete level at least 10 feet above the bottom of casing throughout the entire casing extraction operation except when concrete is at or above the top of drilled pier elevation. Maintain a sufficient head of concrete above the bottom of casing to overcome outside soil and water pressure. As the temporary casing is withdrawn, exercise care in maintaining an adequate level of concrete within the casing so that fluid trapped behind the casing is displaced upward and discharged at the ground surface without contaminating or displacing the drilled pier concrete. Exerting downward pressure, hammering, or vibrating the temporary casing is permitted to facilitate extraction.

Keep a record of the volume of concrete placed in each drilled pier excavation and make it available to the Department.

After all the pumps have been removed from the excavation, the water inflow rate determines the concrete placement procedure. If the inflow rate is less than 6 inches per half hour, the concrete placement is considered dry. If the water inflow rate is greater than 6 inches per half hour, the concrete placement is considered wet.

- **Dry Placement:** Prior to placing concrete, make certain the drilled pier excavation is dry so the flow of concrete completely around the reinforcing steel can be certified by visual inspection. Place the concrete by free fall with a central drop method where the concrete is chuted directly down the center of the excavation.
- **Wet Placement:** Maintain a static water level in the excavation prior to placing concrete. Place concrete with a tremie or a pump in accordance with the applicable parts of Sections 420-6 and 420-8 of the Standard Specifications. Use a tremie tube or pump pipe made of steel with watertight joints. Passing concrete through a hopper at the tube end or through side openings as the tremie is retrieved during concrete placement is permitted. Use a discharge control to prevent concrete contamination when the tremie tube or pump pipe is initially placed in the excavation. Extend the tremie tube or pump pipe into the concrete a minimum of 5 feet at all times except when the concrete is initially introduced into the pier excavation. If the tremie tube or pump pipe pulls out of the concrete for any reason after the initial concrete is placed, restart concrete placement with a steel capped tremie tube or pump pipe.

Once the concrete in the excavation reaches the same elevation as the static water level, placing concrete with the dry method is permitted. Before changing to the dry method of concrete placement, remove the water above the concrete and clean the concrete surface of all scum and sediment to expose clean, uncontaminated concrete.

D. Concrete Placement Time

Place concrete within the time frames specified in Table 1000-2 of the Standard Specifications for Class AA concrete except as noted herein. Do not place concrete so fast as to trap air, water, fluids, soil or any other deleterious materials in the vicinity of the reinforcing steel and the annular zone between the rebar cage and the excavation walls. Should a delay occur because of concrete delivery or other factors, reduce the placement rate to maintain some movement of the concrete. No more than 45 minutes is allowed between placements.

E. Scheduling and Restrictions

If caving or sloughing occurs, no additional compensation will be provided for additional concrete to fill the resulting voids.

During the first 16 hours after a drilled pier has achieved its initial concrete set as determined by the Department, do not drill adjacent piers, do not install adjacent piles and do not allow any equipment wheel loads or "excessive" vibrations to occur at any point within a 20 foot radius of the drilled pier.

In the event that the procedures described herein are performed unsatisfactorily, the Department reserves the right to shut down the construction operations or reject the drilled piers. If the integrity of a drilled pier is in question, use core drilling, sonic or other approved methods at no additional cost to the Department and under the direction of the Department. Dewater and backfill core drill holes with an approved high strength grout with a minimum compressive strength of 4500 psi. Propose remedial measures for any defective drilled piers and obtain approval of all proposals from the Department prior to implementation. No additional compensation will be paid for losses or damage due to remedial work or any investigation of drilled piers found defective or not in accordance with these Special Provisions or the Plans.

19.4 DRILLED PIER FOUNDATIONS WITH WING WALLS

A. General

Wing walls are reinforced concrete sections, rectangular in shape that protrude horizontally out from two sides of a drill pier shaft. They are cast-in-place together with a drilled pier in a monolithic pour. They are used to eliminate torsional rotation of a foundation designed for supporting poles with mast arms.

NCDOT Metal Pole Standards provide design details for two types of wing walls based on their size and concrete volume:

- TYPE 1: 1'-6" long by 1'-0" wide by 3'-0" deep (.4 cubic yards)
- TYPE 2: 3'-0" long by 1"-0" wide by 5'-0" deep (1.2 cubic yards)

The contractor-selected pole fabricator will determine whether wings are needed for the pole foundation.

Contact the Department for assistance in resolving constructability issues if wing walls for a foundation are required, but can not be installed because:

- Of unforeseen difficulties such as underground utility obstructions,
- The construction of the wings may compromise a roadway base,
- The soil conditions are so unstable that construction of the wings may compromise the integrity of the drill pier shaft, or
- Underground rock formations make excavation impractical.

B. Excavation

Excavate for wing walls after boring of the drill pier shaft is complete. If unstable, caving or sloughing soils are anticipated or encountered, stabilize excavation for wings using temporary shoring during excavation and through concrete placement. In wet pour conditions, advise and gain approval from the Department as to the planned construction method intended for the complete installation of the drilled pier prior to performing any excavation of the drill pier or its wings.

C. Reinforcing Steel

Completely assemble the wing wall cage along with the drill pier cage. Install horizontal bars in one continuous length so they extend completely through the drill shaft cage, out to each wing tip. If a drilled pier casing has been installed to construct the drill shaft to stabilize the shaft walls, installation of the wing wall reinforcing steel may not be possible until the drill shaft casing has been extracted. Constructability issues must be resolved and construction methods approved to the satisfaction of the Department prior to assembly of the reinforcing cage.

D. Concrete Placement

Place concrete such that the drilled pier and wing walls are a monolithic structure. No construction joints or keys will be allowed.

19.5 MEASUREMENT AND PAYMENT

Metal pole foundation for metal poles with mast arms will be measured and paid for on a cubic yard basis. No measurement will be made for soil borings and structural design analysis as these will be considered incidental to the metal pole foundation.

Payment will be made under:

Pay Item	**Pay Unit**
Metal Pole Foundation	Cubic Yards

20. TESTING AND ACCEPTANCE

20.1 DESCRIPTION

A. General

Test all equipment, cable and software furnished and installed under these Project Special Provisions. Conduct all testing in the presence of the Department. The Department reserves the

right to perform any inspections deemed necessary to assure that the equipment conforms to the requirements specified in the Project Special Provisions and Plans.

B. Tabletop Test

The Contractor must conduct a test of the new equipment and software at a location near the project area in the presence of the Department. Demonstrate that all the equipment and software are working together in full compliance with the Project Special Provisions.

During the test, interconnect all the electronics and some of the sensors just as they will be interconnected at the VWSS, except that all the devices will be in the same room. Load all microprocessors with all of the software and configuration parameters that they will use at the VWSS.

At a minimum, test the following items:

- VWSS electronics
- ALPR system
- AUR system
- Freeze-frame camera equipment, including frame grabber
- Over-height detector
- Piezoelectric Quartz Sensors
- Inductive Loops
- Infrared Illuminators
- Simulate testing of the following items with devices supplied by the Contractor and connected to the equipment under test:
- All loops
- All piezoelectric quartz sensors

Develop a detailed test procedure and obtain Department approval before the tests are conducted. Allow 30 days for the review period. Demonstrate through the test procedures that all requirements defined in these Project Special Provisions, including but not limited to, functional/system performance requirements, electrical requirements, data transmission/communication requirements, safety/password requirements, and interface requirements with other components of the system have been satisfied. Environmental testing of equipment is not required if the manufacturer certifies that the equipment meets the project environmental specifications. Rewrite the proposed demonstration tests at no additional cost to the project to correct deficiencies noted in the original version. During the testing, perform additional tests if the Department's representative requests such to confirm proper operation.

Compare the results of each test with the requirements specified in the Project Special Provisions and with the approved test procedures. Failure to conform to the requirements of any test will be considered as a complete failure and the equipment and software will be rejected. Make any corrections deemed necessary at no additional cost to the Department. Assume total responsibility

for documenting the results of such tests and furnishing the documented test results to the Department.

The approval of test procedures and witness of such test will not relieve the Contractor of his responsibility to provide a completely acceptable and operating system that meets the requirements of these Project Special Provisions.

C. Operational Tests

Conduct approved tests on all installed equipment and software, both central and field. Perform these tests in the presence of the Department. The following separate tests are required:

1. VWSS Sensors

Repeat the tabletop test where practical, but with all equipment installed and connected. Test the system loops, PQS, and over-height detection. Use real vehicles to test the system.

2. Truck Regulatory Enforcement System

Repeat the tabletop test where practical, but with all equipment installed and connected. Use real vehicles to test the system.

3. ALPR System

Repeat the tabletop test where practical, but with all equipment installed and connected. Use real vehicles to test the system. Test the system in day and night conditions over a 3 hour period each in full daylight and dusk to night.

4. AUR System

Repeat the tabletop test where practical, but with all equipment installed and connected. Use real vehicles to test the system. Test the system in day and night conditions over a 3 hour period each in full daylight and dusk to night.

D. Observation Period

After all equipment and software comprising the system has been accepted, satisfactory completion of the system acceptance test, and after the training is complete, a 60-day observation period begins. The Department will be responsible for operating the system during this period. The goal of the observation period is to demonstrate that the system has been properly installed and integrated, performs properly, and complies with the Project Special Provisions.

The following conditions apply to the observation period:

- During the entire observation period, ensure the system monitors all the components of the VWSS, including the ALPR and AUR systems, and performs all the functions described in these Project Special Provisions.
- If any hardware item provided under these Project Special Provisions fails, repair the item at the Contractor's expense, and then the observation period for the failed item begins again for the full 60-day duration.
- During the observation period, have personnel responding to the problem within 24 hours after being notified of a problem by the Department. Within two days, have

personnel on-site, with replacement equipment, addressing and correcting any issues with the WIM equipment, ALPR and AUR systems.

- If any other problem is discovered, such as erroneous computations, the observation period will be suspended until the Contractor fixes the problem at his expense. Once the problem has been eliminated, the observation period will resume. If the problem was one that affected the entire system rather than just one field device, the observation period will not resume until the system has performed properly for at least 72 hours. During this 72-hour period, demonstrate that any corrections or modifications made are valid, that the problems which restricted system operation have been corrected, and no new problems have resulted from the changes.
- Total system "down time" may not exceed 30 hours during the 60-day Observation Period. Down time includes the time of suspension of the observation period as described in the previous paragraph. Down time is a condition caused by failure of the central equipment, system software, field equipment or communication system, which causes the system to cease normal operation. If total system "down time" exceeds 30 hours, a full duration of the observation period will begin again.
- Terminate the observation period if 10% or more of the total quantity of any individual hardware item fails. Commence a full observation period for that hardware item upon the repair of all failed hardware items.

Upon successful completion of the Observation Period, the Department will accept the system, providing that all errors and omissions in Contractor-supplied documentation have been corrected and all other requirements of the Project Special Provisions have been met. Final acceptance will be in writing from the Department.

20.2 MEASUREMENT AND PAYMENT

No measurement will be made of this work as these will be considered incidental to the work required herein.

21. TRAINING

21.1 DESCRIPTION

Provide a three day, minimum of 18 hours training covering the operation of the equipment and software being supplied as part of this project for up to 2 sessions, 10 people per session. Enlist manufacturer's representatives or personnel approved by the Department to conduct the training courses.

Include both classroom instruction and practical experience on the central equipment. Provide both an introduction to the system and the theory of its operation in the training session. At a minimum, include the components of the system, central software operation, and the configuration of the central and field equipment. Provide each trainee with hands-on experience with the computer and controller system. The course should cover the operation of all software provided in this project. The course should also cover the proper operating techniques.

At least 40 days prior to commencement of each training course, submit detailed course curriculums, draft manuals and handouts, and resumes of the instructors. The Department will review and request modifications of that material as appropriate.

Limit training courses to no more than six hours of training in any one day. Conduct all courses on weekdays at times to be specified by the Department. The Department or NCSHP will furnish the training facility in Wilmington, NC.

Provide training material generated for each course including manuals and other handouts for each attendee that serves not only as subject guidance, but as quick reference material for future use. The courses must utilize, to the greatest extent possible, the documentation described in these Project Special Provisions. Use the training courses to familiarize the students with all documentation that has been provided as part of this project. Deliver all course material, in reproducible form, to the Department immediately following course completion.

Video record each training session and deliver the videotape or DVD to the Department at the conclusion of the training.

21.2 MEASUREMENT AND PAYMENT

Training will be measured and paid for at the contract lump sum price for the work detailed in this section. No measurement will be made of instructors, materials, and other items required for the training as these will be considered incidental.

Payment will be made under:

Pay Item	**Pay Unit**
Training	Lump Sum

22. DOCUMENTS AND SUBMITTALS

22.1 GENERAL

The submittals listed below complement requirements stated throughout these Project Special Provisions and do not replace them.

Provide all drawings on 22"X34" sheet of paper unless approved by the Engineer otherwise. The drawing must fill the entire sheet of paper excluding a 2" border all around.

Allow 30 days for all documentation and submittal reviews unless otherwise stated in these Project Special Provisions. Supplement each drawing by material cut sheets and parts list. Provide parts list in the following format:

Part ID	**Source**	**Part number**	**Alternate source**	**Alternate Part number**	**Description**

22.2 DRAWINGS AND DOCUMENTS' CERTIFICATION

Provide plans for the equipment cabinet, mounting description, and shop drawings with documentation and calculations approved by a Professional Engineer registered in the state of North Carolina that bears his/her signature, seal, and date of acceptance (where applicable).

22.3 MECHANICAL

This set of submittals includes, but is not limited to, material specifications and parts list.

22.4 ELECTRICAL

This set of submittals includes, but is not limited to, material specifications, parts list, and wiring diagrams within the equipment cabinet and any electrical service equipment required.

22.5 Electronics

This set of submittals includes, but is not limited to, material specifications, parts list, and schematic diagrams for all electronics assemblies and sub-assemblies used in the system.

22.6 BLOCK DIAGRAMS AND USER MANUALS

Provide block diagrams with the material submittals for those items listed below. Provide User and Instruction Manuals (prior to training) for those items listed below:

- VWSS Field Equipment, including ALPR system, AUR system, over-height detection, and freeze-frame camera system
- VWSS Cabinet
- VWSS Controller
- Piezoelectric Quartz Sensors
- And other system's boards/assemblies that help in understanding, troubleshooting, and repairing the system and/or system's components.

22.7 PROPRIETARY PARTS

Provide a list of all proprietary, non-warranty electronic component parts, along with its associated cost, at which the vendor will supply for a two year period after final project acceptance. Failure to supply this required proprietary part and price information may be grounds for rejection of the submitted item due to incomplete information. A part is considered to be a proprietary part if it is designed and manufactured exclusively for a specific application and is not commercially available for sale to the general public. In addition, any item that is sole source (e.g. available only from the vendor or from a single known manufacturer) is considered to be proprietary and should be identified along with the sole source. Identify and quote a price for parts that are no longer being manufactured and identify the item as one that is no longer manufactured.

22.8 USE BY NCDOT AND PROTECTION OF MANUFACTURER'S PROPRIETARY INFORMATION

NCDOT will use the above documentation (schematics, drawings, software, firmware, manuals, etc.) exclusively for the following purposes: diagnosing and performing repairs on malfunctioning

equipment, equipment circuit boards, and malfunctioning systems; operational test of repaired equipment, circuit boards, systems; and performing authorized upgrades to equipment, circuit boards, and software supplied under this contract. NCDOT will not use or copy devices or software for any purpose other than diagnosis, repair, and testing or to perform authorized firmware or software upgrades.

Upon notification by the manufacturer, the Department agrees not to divulge any proprietary or otherwise confidential information contained in the above required documentation. NCDOT agrees to protect and secure any proprietary documentation identified by the manufacturer as proprietary or confidential. Upon request by the manufacturer, NCDOT agrees to sign a binding non-disclosure agreement with the manufacturer or other business that is providing documentation it considers proprietary or otherwise confidential.

22.9 MEASUREMENT AND PAYMENT

No measurement will be made of this work as these will be considered incidental to the work required herein.

23. SYSTEM WARRANTY

23.1 DESCRIPTION

A. General

Unconditionally warrant the performance of all systems and subsystems installed under this contract, including all equipment, hardware, and software for a period of three (3) years from the successful completion of the 60-day observation period.

Provide the necessary labor, parts, materials, tools, test equipment and facilities required to address any warranty issues related to the system after it is installed. Consider this warranty period to be part of the work required to be completed by the final completion date of the project.

B. Period of Performance

The period of performance for the Warranty shall be three (3) years from the successful completion of the 60-day observation period.

The warranty coverage will be renewable on an annual basis for an additional five (5) years by mutual consent of both parties. Develop the cost for the renewable option through mutual agreement of both parties.

C. Scope of Warranty

Ensure the components of all systems are in good working condition and take appropriate action to remedy performance issues. Good working condition is defined under this project as equipment meeting the system specifications for acceptance, accuracy, and tolerances as defined in these Project Special Provisions.

Provide scheduled diagnosis and repair service and/or respond to repair malfunctioning equipment as outlined below:

- Complete scheduled preventative maintenance, diagnostic testing and repair (if needed) at six (6) month intervals. Preventative maintenance shall be completed in accordance with equipment manufacturer's recommendations and standard practices. Provide routine checks on all major systems, system components and ancillary equipment and take any corrective action to ensure proper long-term operation. The maintenance shall include, but not be limited to the following activities:
- Test signal level and lead cable of VWSS piezoelectric quartz sensors and loops. Repair or replace as required.
- Verify all loop and sensor performance and reliability. Adjust calibration on devices to meet the specifications defined herein for each device. Repair or replace equipment as required to meet specifications.
- Check installation of grout and sealant for loops and sensors. Repair or replace as required.
- Perform visual inspection of detector housings and repair or replace as required.
- Check the calibration of and clean (if needed) the AVI antenna.
- Check the calibration of and clean the over-height detector.
- Clean the interior and exterior of WIM electronics, power supplies, controllers and communications equipment in the equipment cabinet. Repair or replace as required.
- Check condition of all WIM cables and connectors, terminal strips, and back-up batteries. Repair or replace as required.
- Perform visual inspection of the equipment cabinet. Repair or replace as required.
- Test and visually inspect equipment cabinet ventilation fan and filter, thermostat, light and fused switch. Repair or replace as required.
- Test and verify control and sequence of operation of interface components.
- Test and verify all components of the ALPR system. Adjust, repair or replace as required.
- Test and verify all components of the AUR system. Adjust, repair or replace as required.
- Calibrate the piezoelectric quartz sensors every six (6) months or according to manufacturer's recommendations. Ensure the calibration includes verifying system and interface operations. Vehicles to be used for calibrating the sensors will be provided by the Department.
- Provide two system operations refresher courses one (1) month prior to the end of the warranty period. The refresher courses shall have a maximum duration of six hours. Include in the refresher course a hands-on demonstration of system functionality. The Department will provide facilities for the refresher course.
- Provide emergency repair services, on an as needed basis. The response time for emergency repair service shall be as follows:

- 24 hours to acknowledge request
- 48 hours to respond to request
- 7 days to repair equipment and return system functionality. The repaired system shall function to the specifications defined in these Project Special Provisions for acceptance, accuracy, and tolerances. Document all activities performed under the warranty agreement, both preventative and emergency maintenance, in an electronic form that facilitates sorting the records by time period and/or device type. Submit a proposed format for this database for the Department's approval. Include, as a minimum:
- Date and time of scheduled preventative maintenance
- All preventative maintenance activities completed
- All parts repaired or replaced during preventative maintenance
- Technician completing preventative maintenance work
- Repair history for all systems and subsystems
- Date and time of emergency maintenance request
- Date and time of technician on site to respond to emergency maintenance request
- Description of defective equipment or malfunctioning operations during emergency maintenance request
- Technician responding to emergency maintenance request
- Corrective actions taken during emergency maintenance request
- Date and time that operations restored after emergency maintenance request
- Model and serial number of any equipment repaired and replaced during emergency maintenance request.

Provide both electronic and hardcopy records of the updated database within ten (10) days of each maintenance activity.

Document all itemized material, equipment, and labor costs incurred to maintain the VWSS during the warranty period. The cost records shall differentiate between preventative and emergency maintenance costs. Provide these records to the Department on a semi-annual basis within fifteen (15) days after the end of the six-month period. These records will not be used as a basis of payments to the Contractor. Ensure that these cost records are complete and accurate. The Department may perform an audit to verify the accuracy of the cost records.

Provide software upgrades for all new software revisions completed during the warranty period at no additional cost to the Department. Identify a cutover procedure for all software upgrades, which ensures that there is no interruption of service or failure of any operation as a result of upgrading the software. Also develop a contingency plan to re-install older versions of software, by the Contractor (at no additional cost to the Department), if any operation fails or any system degradation is encountered as a result of a software upgrade.

D. Warranty Evaluation

Two (2) months prior to the end of the warranty period, the Department will inspect the system thoroughly for potential system defects. This inspection will be done by the Department's personnel or representative. Assist the Department's personnel or representative during this inspection. Two (2) weeks prior to the inspection, provide a summary report of all preventative and emergency maintenance records. This report shall document and certify that all components have been maintained fully in accordance with the Project Special Provisions and manufacturer recommendations and that all manufacturer warranties that extend beyond the Contractor's warranty have been in no way compromised.

Following the inspection, the Department will determine if there are any unresolved defects with equipment hardware or software. The Department will provide a punch list to the Contractor for the replacement or repair of defective components or repairs to system software. Replace or repair equipment and software identified in the punch list within thirty days of receipt of the punch list. Also replace any components whose manufacturer warranty has been voided or compromised by any action/inaction on the part of the Contractor. Document all repairs or replacements completed, providing the documentation to the Department within two (2) months of receipt of the punch list.

E. Correction of Work

Re-execute any work that fails to conform to the requirements of the Contract and that appears during the process of the work. Remedy any defects due to faulty materials or workmanship which appear within the warranty period. The provisions of this article apply to work done by subcontractors as well as direct employees of the Contractor.

F. Traffic Control

Provide traffic control for all maintenance activities requiring lane closures. Traffic control activities shall be in accordance with NCDOT standards. When lane closures are required for preventative maintenance, document the proposed traffic control plan and coordinate lane closure activities with the Department thirty (30) days prior to the preventative maintenance activities. When lane closures are required for emergency maintenance, coordinate lane closure activities with the Department as soon as practicable.

23.2 MATERIALS

All replacement materials and equipment provided under the warranty shall meet or exceed the requirements as defined in the Plans and the Project Special Provisions. If during the warranty period a part or component of a system or subsystem is no longer available to the Contractor, obtain equipment which ensures that the systems and subsystems meet or exceed the specifications and functionality as defined in these Project Special Provisions.

Provide all tools, test equipment and other equipment necessary in the maintenance, repair and replacement of all components furnished under this contract during the warranty period.

23.3 CONSTRUCTION METHODS

In replacing equipment under the maintenance agreement, meet or exceed the construction requirements for each component as defined in the Plans and Project Special Provisions.

23.4 MEASUREMENT AND PAYMENT

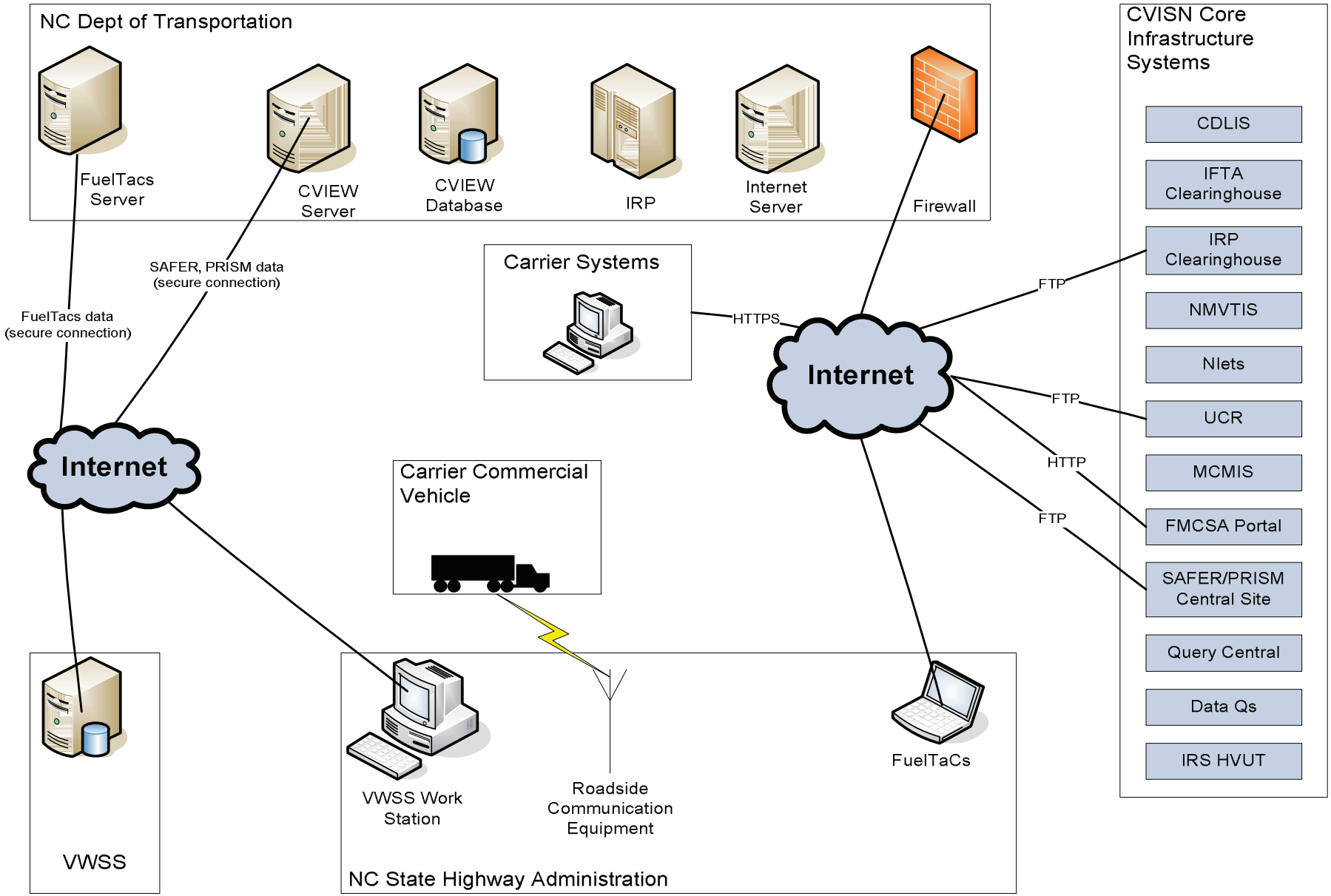
System Warranty will be measured and paid for on an annual basis for the work detailed in this section. Payment will be made in three (3), equal annual payments.

No measurement will be made for providing labor, parts, materials, shipping, vehicles, tools, test equipment, documentation and facilities as these will be considered incidental to furnishing the System Warranty.

Payment will be made under:

Pay Item	**Pay Unit**
System Warranty	Lump Sum

Fig-1. NC State Network Diagram



LISTING OF DBE SUBCONTRACTORS

Sheet _____ of _____

FIRM NAME AND ADDRESS	ITEM NO.	ITEM DESCRIPTION	(*) AGREED UPON UNIT PRICE	DOLLAR VOLUME OF SUBLET ITEM

CONTRACT NO._____ **COUNTY**_____ **FIRM**_____

COST OF CONSTRUCTION WORK ONLY **$** _____

(*) The Dollar Volume Shown In This Column Shall be Actual Price Agreed Upon by the Prime Contractor and the DBE Subcontractor, and These Prices Will Be Used to Determine _____**%** The Percentage of the DBE Participation in this Contract.

Dollar Volume of DBE Subcontractor **$ _____

Percentage of Total Construction Cost

**MUST HAVE ENTRY EVEN IF FIGURE TO BE ENTERED IS ZERO.

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

LETTER OF INTENT TO PERFORM AS A SUBCONTRACTOR

CONTRACT:	NAME OF BIDDER:

The undersigned intends to perform work in connection with the above contract upon execution of the bid and subsequent award of contract by the Board of Transportation as:

Name of MBE/WBE/DBE Subcontractor_____

Address_____

City_____State_____Zip_____

Please check all that apply:

Minority Business Enterprise (MBE) ____

Women Business Enterprise (WBE) ____

Disadvantaged Business Enterprise (DBE) ____

The MBE /WBE /DBE status of the above named subcontractor is certified by the North Carolina Department of Transportation. The above named subcontractor is prepared to perform the described work listed on the attached MBE/WBE/DBE Commitment Items sheet, in connection with the above contract upon execution of the bid and subsequent award of contract by the Board of Transportation. The above named subcontractor is prepared to perform the described work at the estimated Commitment Total for Subcontractor Price identified on the MBE/WBE/DBE Commitment Items sheet and amount indicated below.

Commitment Total based on estimated Unit Prices and Quantities on the "attached" MBE/WBE/DBE Commitment Items sheet. Amount $ _____

The above named bidder and subcontractor mutually accepts the Commitment Total estimated for the Unit Prices and Quantities. This commitment total is based on estimated quantities only and most likely will vary up or down as the project is completed. Final compensation will be based on actual quantities of work performed and accepted during the pursuance of work. The above listed amount represents the entire dollar amount quoted based on these estimated quantities. No conversations, verbal agreements, and/or other forms of non-written representations shall serve to add, delete, or modify the terms as stated.

This document shall not serve in any manner as an actual subcontract between the two parties. A separate subcontractor agreement will describe in detail the contractual obligations of the bidder and the MBE/WBE/DBE subcontractor.

Affirmation

The above named MBE/ WBE/ DBE subcontractor affirms that it will perform the portion(s) of the contract for the estimated dollar value as stated above.

Name of MBE/ WBE/ DBE Subcontractor	**Name of Bidder**
Signature / Title	**Signature / Title**
Date	**Date**

EXECUTION OF BID
NON-COLLUSION AFFIDAVIT, DEBARMENT CERTIFICATION AND GIFT BAN CERTIFICATION

CORPORATION

The person executing the bid, on behalf of the Bidder, being duly sworn, solemnly swears (or affirms) that neither he, nor any official, agent or employee of the bidder has entered into any agreement, participated in any collusion, or otherwise taken any action which is in restraint of free competitive bidding in connection with any bid or contract, and that the Bidder intends to do the work with its own bonafide employees or subcontractors and is not bidding for the benefit of another contractor.

In addition, execution of this bid in the proper manner also constitutes the Bidder's certification of *Status* under penalty of perjury under the laws of the United States in accordance with the Debarment Certification attached, provided that the Debarment Certification also includes any required statements concerning exceptions that are applicable.

N.C.G.S. § 133-32 and Executive Order 24 prohibit the offer to, or acceptance by, any State Employee of any gift from anyone with a contract with the State, or from any person seeking to do business with the State. By execution of any response in this procurement, you attest, for your entire organization and its employees or agents, that you are not aware that any such gift has been offered, accepted, or promised by any employees of your organization.

SIGNATURE OF CONTRACTOR

_____
Full name of Corporation

_____
Address as prequalified

Attest _____ By _____

Secretary/Assistant Secretary
Select appropriate title

President/Vice President/Assistant Vice President
Select appropriate title

_____
Print or type Signer's name

_____
Print or type Signer's name

CORPORATE SEAL

AFFIDAVIT MUST BE NOTARIZED

NOTARY SEAL

Subscribed and sworn to before me this the

_____ day of _____, 20_____

_____
Signature of Notary Public

Of _____County

State of _____

My Commission Expires _____

EXECUTION OF BID
NON-COLLUSION AFFIDAVIT, DEBARMENT CERTIFICATION AND GIFT BAN CERTIFICATION

LIMITED LIABILITY COMPANY

The person executing the bid, on behalf of the Bidder, being duly sworn, solemnly swears (or affirms) that neither he, nor any official, agent or employee of the bidder has entered into any agreement, participated in any collusion, or otherwise taken any action which is in restraint of free competitive bidding in connection with any bid or contract, and that the Bidder intends to do the work with its own bonafide employees or subcontractors and is not bidding for the benefit of another contractor.

In addition, execution of this bid in the proper manner also constitutes the Bidder's certification of *Status* under penalty of perjury under the laws of the United States in accordance with the Debarment Certification attached, provided that the Debarment Certification also includes any required statements concerning exceptions that are applicable.

N.C.G.S. § 133-32 and Executive Order 24 prohibit the offer to, or acceptance by, any State Employee of any gift from anyone with a contract with the State, or from any person seeking to do business with the State. By execution of any response in this procurement, you attest, for your entire organization and its employees or agents, that you are not aware that any such gift has been offered, accepted, or promised by any employees of your organization.

SIGNATURE OF CONTRACTOR

_____
Full Name of Firm

_____
Address as Prequalified

_____ Signature of Manager _____
Witness's Signature Individually

_____ _____
Print or type Signer's name Print or type Signer's Name

AFFIDAVIT MUST BE NOTARIZED

Subscribed and sworn to before me this the

NOTARY SEAL

_____ day of _____ 20__.

_____
Signature of Notary Public

of _____County

State of _____

My Commission Expires:_____

EXECUTION OF BID
NON-COLLUSION AFFIDAVIT, DEBARMENT CERTIFICATION AND GIFT BAN CERTIFICATION
JOINT VENTURE (2) or (3)

The person executing the bid, on behalf of the Bidder, being duly sworn, solemnly swears (or affirms) that neither he, nor any official, agent or employee of the bidder has entered into any agreement, participated in any collusion, or otherwise taken any action which is in restraint of free competitive bidding in connection with any bid or contract, and that the Bidder intends to do the work with its own bonafide employees or subcontractors and is not bidding for the benefit of another contractor.

In addition, execution of this bid in the proper manner also constitutes the Bidder's certification of *Status* under penalty of perjury under the laws of the United States in accordance with the Debarment Certification attached, provided that the Debarment Certification also includes any required statements concerning exceptions that are applicable.

N.C.G.S. § 133-32 and Executive Order 24 prohibit the offer to, or acceptance by, any State Employee of any gift from anyone with a contract with the State, or from any person seeking to do business with the State. By execution of any response in this procurement, you attest, for your entire organization and its employees or agents, that you are not aware that any such gift has been offered, accepted, or promised by any employees of your organization.

SIGNATURE OF CONTRACTOR

Instructions: **2 Joint Venturers** Fill in lines (1), (2) and (3) and execute. **3 Joint Venturers** Fill in lines (1), (2), (3) and (4) and execute. On Line (1), fill in the name of the Joint Venture Company. On Line (2), fill in the name of one of the joint venturers and execute below in the appropriate manner. On Line (3), print or type the name of the other joint venturers and execute below in the appropriate manner. On Line (4), fill in the name of the third joint venturer, if applicable and execute below in the appropriate manner.

(1) _____
Name of Joint Venture

(2) _____
Name of Contractor

_____
Address as prequalified

_____		_____
Signature of Witness or Attest	By	Signature of Contractor
_____		_____
Print or type Signer's name		Print or type Signer's name

If Corporation, affix Corporate Seal and

(3) _____
Name of Contractor

_____
Address as prequalified

_____		_____
Signature of Witness or Attest	By	Signature of Contractor
_____		_____
Print or type Signer's name		Print or type Signer's name

If Corporation, affix Corporate Seal and

(4) _____
Name of Contractor *(for 3 Joint Venture only)*

_____
Address as prequalified

_____		_____
Signature of Witness or Attest	By	Signature of Contractor
_____		_____
Print or type Signer's name		Print or type Signer's name

If Corporation, affix Corporate Seal

NOTARY SEAL
Affidavit must be notarized for Line (2)
Subscribed and sworn to before me this
_____day of_____ 20___
_____
Signature of Notary Public
of _____County
State of _____
My Commission Expires:_____

NOTARY SEAL
Affidavit must be notarized for Line (3)
Subscribed and sworn to before me this
_____day of _____ 20___
_____
Signature of Notary Public
of _____County
State of _____
My Commission Expires:_____

NOTARY SEAL
Affidavit must be notarized for Line (4)
Subscribed and sworn to before me this
____day of _____ 20_____
_____
Signature of Notary Public
of _____County
State of _____
My Commission Expires:_____

EXECUTION OF BID
NON-COLLUSION AFFIDAVIT, DEBARMENT CERTIFICATION AND GIFT BAN CERTIFICATION

INDIVIDUAL DOING BUSINESS UNDER A FIRM NAME

The person executing the bid, on behalf of the Bidder, being duly sworn, solemnly swears (or affirms) that neither he, nor any official, agent or employee of the bidder has entered into any agreement, participated in any collusion, or otherwise taken any action which is in restraint of free competitive bidding in connection with any bid or contract, and that the Bidder intends to do the work with its own bonafide employees or subcontractors and is not bidding for the benefit of another contractor.

In addition, execution of this bid in the proper manner also constitutes the Bidder's certification of Status under penalty of perjury under the laws of the United States in accordance with the Debarment Certification attached, provided that the Debarment Certification also includes any required statements concerning exceptions that are applicable.

N.C.G.S. § 133-32 and Executive Order 24 prohibit the offer to, or acceptance by, any State Employee of any gift from anyone with a contract with the State, or from any person seeking to do business with the State. By execution of any response in this procurement, you attest, for your entire organization and its employees or agents, that you are not aware that any such gift has been offered, accepted, or promised by any employees of your organization.

SIGNATURE OF CONTRACTOR

Name of Contractor _____
Individual name

Trading and doing business as _____
Full name of Firm

_____
Address as Prequalified

_____ _____
Signature of Witness Signature of Contractor, Individually

_____ _____
Print or type Signer's name Print or type Signer's name

AFFIDAVIT MUST BE NOTARIZED

Subscribed and sworn to before me this the

NOTARY SEAL

_____ day of _____ 20__.

_____
Signature of Notary Public

of _____County

State of _____

My Commission Expires:_____

EXECUTION OF BID
NON-COLLUSION AFFIDAVIT, DEBARMENT CERTIFICATION AND GIFT BAN CERTIFICATION

INDIVIDUAL DOING BUSINESS IN HIS OWN NAME

The person executing the bid, on behalf of the Bidder, being duly sworn, solemnly swears (or affirms) that neither he, nor any official, agent or employee of the bidder has entered into any agreement, participated in any collusion, or otherwise taken any action which is in restraint of free competitive bidding in connection with any bid or contract, and that the Bidder intends to do the work with its own bonafide employees or subcontractors and is not bidding for the benefit of another contractor.

In addition, execution of this bid in the proper manner also constitutes the Bidder's certification of *Status* under penalty of perjury under the laws of the United States in accordance with the Debarment Certification attached, provided that the Debarment Certification also includes any required statements concerning exceptions that are applicable.

N.C.G.S. § 133-32 and Executive Order 24 prohibit the offer to, or acceptance by, any State Employee of any gift from anyone with a contract with the State, or from any person seeking to do business with the State. By execution of any response in this procurement, you attest, for your entire organization and its employees or agents, that you are not aware that any such gift has been offered, accepted, or promised by any employees of your organization.

SIGNATURE OF CONTRACTOR

Name of Contractor _____
Print or type Individual name

_____
Address as Prequalified

_____
Signature of Contractor, Individually

_____
Print or type Signer's Name

_____
Signature of Witness

_____
Print or type Signer's name

AFFIDAVIT MUST BE NOTARIZED

Subscribed and sworn to before me this the

NOTARY SEAL

_____ day of _____ 20__.

_____
Signature of Notary Public

of _____County

State of _____

My Commission Expires:_____

EXECUTION OF BID
NON-COLLUSION AFFIDAVIT, DEBARMENT CERTIFICATION AND GIFT BAN CERTIFICATION

PARTNERSHIP

The person executing the bid, on behalf of the Bidder, being duly sworn, solemnly swears (or affirms) that neither he, nor any official, agent or employee of the bidder has entered into any agreement, participated in any collusion, or otherwise taken any action which is in restraint of free competitive bidding in connection with any bid or contract, and that the Bidder intends to do the work with its own bonafide employees or subcontractors and is not bidding for the benefit of another contractor.

In addition, execution of this bid in the proper manner also constitutes the Bidder's certification of Status under penalty of perjury under the laws of the United States in accordance with the Debarment Certification attached, provided that the Debarment Certification also includes any required statements concerning exceptions that are applicable.

N.C.G.S. § 133-32 and Executive Order 24 prohibit the offer to, or acceptance by, any State Employee of any gift from anyone with a contract with the State, or from any person seeking to do business with the State. By execution of any response in this procurement, you attest, for your entire organization and its employees or agents, that you are not aware that any such gift has been offered, accepted, or promised by any employees of your organization.

SIGNATURE OF CONTRACTOR

_____
Full Name of Partnership

_____
Address as Prequalified

_____ By _____
Signature of Witness Signature of Partner

_____ _____
Print or type Signer's name Print or type Signer's name

AFFIDAVIT MUST BE NOTARIZED

Subscribed and sworn to before me this the

day of _____ 20_____.

NOTARY SEAL

_____
Signature of Notary Public

of _____County

State of _____

My Commission Expires:_____

DEBARMENT CERTIFICATION

Conditions for certification:

1. The prequalified bidder shall provide immediate written notice to the Department if at any time the bidder learns that his certification was erroneous when he submitted his debarment certification or explanation that is file with the Department, or has become erroneous because of changed circumstances.

2. The terms *covered transaction, debarred, suspended, ineligible, lower tier covered transaction, participant, person, primary covered transaction, principal, proposal,* and *voluntarily excluded,* as used in this provision, have the meanings set out in the Definitions and Coverage sections of the rules implementing Executive Order 12549. A copy of the Federal Rules requiring this certification and detailing the definitions and coverages may be obtained from the Contract Officer of the Department.

3. The prequalified bidder agrees by submitting this form, that he will not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in NCDOT contracts, unless authorized by the Department.

4. For Federal Aid projects, the prequalified bidder further agrees that by submitting this form he will include the Federal-Aid Provision titled *Required Contract Provisions Federal-Aid Construction Contract (Form FHWA PR* 1273) provided by the Department, without subsequent modification, in all lower tier covered transactions.

5. The prequalified bidder may rely upon a certification of a participant in a lower tier covered transaction that he is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless he knows that the certification is erroneous. The bidder may decide the method and frequency by which he will determine the eligibility of his subcontractors.

6. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this provision. The knowledge and information of a participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

7. Except as authorized in paragraph 6 herein, the Department may terminate any contract if the bidder knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available by the Federal Government.

DEBARMENT CERTIFICATION

The prequalified bidder certifies to the best of his knowledge and belief, that he and his principals:

a. Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency;

b. Have not within a three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records; making false statements; or receiving stolen property;

c. Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph b. of this certification; and

d. Have not within a three-year period preceding this proposal had one or more public transactions (Federal, State or local) terminated for cause or default.

e. Will submit a revised Debarment Certification immediately if his status changes and will show in his bid proposal an explanation for the change in status.

If the prequalified bidder cannot certify that he is not debarred, he shall provide an explanation with this submittal. An explanation will not necessarily result in denial of participation in a contract.

Failure to submit a non-collusion affidavit and debarment certification will result in the prequalified bidder's bid being considered non-responsive.

☐ Check here if an explanation is attached to this certification.

North Carolina Department of Transportation
BID FORM

WBS Element #: 33879.2.41 Contract Number: DC00009

Project Description: Furnishing and Installing Equipment and Materials for Installation for the New Weigh In Motion System Near Wilmington, NC.

LINE ITEM	STD. ITEM NO.	SECT.	DESCRIPTION	QTY	UNIT	UNIT PRICE	AMOUNT BID
1	0000100000-N	800	MOBILIZATION	1	LS		
2	1220000000-E	545	INCIDENTAL STONE BASE	15	TON		
3	4589000000-N	SP	Generic Traffic Control Item-Traffic Control Lump Sum	1	LS		
4	5255000000-N	LS	PORTABLE LIGHTING	1	LS		
5	6000000000-E	1610	TEMPORARY SILT FENCE	500	LF		
6	6000000000-E	1610	STONE FOR EC CLASS B	8	TON		
7	6012000000-E	1610	SEDIMENT CONTROL STONE	8	TON		
8	6036000000-E	1631	Matting For Erosion Control	100	SY		
9	6042000000-E	1632	1/4" HARDWARE CLOTH	50	LF		
10	6084000000-E	1660	SEED & MULCHING	0.25	ACR		
11	7300000000-E	SP	Unpaved Trenching (1) (1")	50	LF		
12	7300000000-E	SP	Unpaved Trenching (1) (2")	750	LF		
13	7300000000-E	SP	Unpaved Trenching (2) (2")	30	LF		
14	7300000000-E	SP	Unpaved Trenching (3) (2")	10	LF		
15	7300000000-E	SP	Directional Drill (2) (1.25")	85	LF		
16	7324000000-N	SP	Junction Box (Standard)	3	EA		
17	7348000000-N	SP	Junction Box (Over-Sized Heavy Duty)	3	EA		
18	7980000000-N	SP	Generic Signal Item-Equipment Disconnect	1	EA		
19	7980000000-N	SP	Generic Signal Item-Single Phase Transformer	1	EA		
20	7980000000-N	SP	Generic Signal Item-5/8" X 10' Grounding Electrode	6	EA		
21	7980000000-N	SP	Generic Signal Item-#4 AWG Solid Bare Copper Grounding Conductor	30	EA		
22	7980000000-N	SP	Generic Signal Item-Piezoelectric Quartz	4	EA		

			Sensors (Set)				
23	7980000000-N	SP	Generic Signal Item-Over-height Vehicle Detection System	1	EA		
24	7980000000-N	SP	Generic Signal Item-Freeze-Frame Camera Assembly	1	EA		
25	7980000000-N	SP	Generic Signal Item-Base Mounted Equipment Cabinet	1	EA		
26	7980000000-N	SP	Generic Signal Item-Cabinet Base Extender	1	EA		
27	7980000000-N	SP	Generic Signal Item-Cabinet Foundation	1	EA		
28	7980000000-N	SP	Generic Signal Item-Freeze-Frame Camera and AUR Metal Pole	1	EA		
29	7980000000-N	SP	Generic Signal Item-Metal Pole with Folding Mast Arm	1	EA		
30	7985000000-N	SP	Generic Signal Item-VWSS Electronics	1	LS		
31	7985000000-N	SP	Generic Signal Item-ALPR System	1	LS		
32	7985000000-N	SP	Generic Signal Item-AUR System	1	LS		
33	7985000000-N	SP	Generic Signal Item-Central Controller Software	1	LS		
34	7985000000-N	SP	Generic Signal Item-Training	1	LS		
35	7985000000-N	SP	Generic Signal Item-System Warranty	1	LS		
36	7990000000-E	SP	Generic Signal Item-3-Wire Copper Feeder Conductors	535	LF		
37	7990000000-E	SP	Generic Signal Item-4-Wire Copper Feeder Conductors	20	LF		
38	7990000000-E	SP	Generic Signal Item-Inductive Loop Sawcut	550	LF		
39	7992000000-E	SP	Generic Signal Item-Metal Pole Foundation	4	CY		

TOTAL BID FOR PROJECT:_____

CONTRACTOR_____

ADDRESS_____

Federal Identification Number_____

Contractors License Number_____

Authorized Agent_____
Title_____

Signature_____
Date_____

Witness_____
Title_____

Signature_____ Date_____

CORPORATE SEAL

CORPORATE SEAL

THIS SECTION TO BE COMPLETED BY NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

This bid has been reviewed in accordance with Article 103-1 of the Standard Specifications for Roads and Structures 2006.

Reviewed by_____ ***Date***_____